THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

THE BOARD OF AGRICULTURE, AND ITS DESIGNED ACTION.

A bill has passed the House of Delegates, but still remains undecided upon by the Senate, to pay for the personal expenses of the members of the Board of Agriculture, while the Board is actually in session, $3 per day, and the same rate of mileage pay, for travelling to and from the place of meeting, as is allowed to members of the Assembly. Even if this bill should pass the Senate, it will furnish nothing towards paying for the actual necessary outlay of money by members, in other, and as necessary expenditures; nor even for the smallest and most indispensable expenses of the Board itself, in stationary, clerkship, printing, &c. It is hoped however that even the continued existence of a great deficiency in this respect will not prevent the members performing the duty imposed on them, though the greater part of their expenditures, as well as their labor, may be at their own cost. But it will be absolutely necessary that at least the poor compensation proposed by the bill now before the Senate shall be given, or otherwise it is very certain that the law instituting the Board had as well be repealed *directly*, as in this indirect manner. However willing the members of the Board may be to make considerable sacrifices for the public benefit, it would be folly to expect of those the most remote, who have to travel more than 800 miles merely to attend and return from the annual meeting of the Board, can continue to do so at their own cost entirely. The editor, though a member of the Board, may be free to speak thus, because, being within 20 miles of Richmond, the mileage pay to him would be scarcely worth consideration. And the *per diem* pay (which for this first year would be but $18 for each one,) can scarcely be supposed to have much influence on his action, or that of any other member. If his own measure of pecuniary compensation were only in view, he would prefer that the services were to be, as under the original law, *altogether gratuitously rendered*. It is for other considerations, necessarily involving the very existence of the Board of Agriculture, and all the hoped for usefulness to be derived from even so imperfect a plan, that the bill before the Senate is to him of the slightest importance.

It may then be understood that the proposed action of the Board of Agriculture, as submitted to the legislature, (and published in the last No. of the Farmers' Register, p. 688,) is dependent upon the enactment of the bill before the Senate, or some other not less operative legal provisions. In case of such enactment, a circular letter of inquiry from the Board will speedily be printed, together with the plan of operations, and sent to sundry of the farmers of every county, whose public spirit it is hoped may induce their furnishing their aid to the great object of collecting and diffusing agricultural knowledge.

In pursuance of the general plan, (which the readers of this publication already have had before them,) the editor, as a member of the Board, as soon as *permitted*, will commence his share of the labors of personal examination and inquiry through some counties of the southern portion of the tide-water region of Virginia, which district has been assigned to his general supervision, by the arrangement and division of labors of the Board. It would greatly facilitate such labors of personal inquiry and examination, if, in advance, something were done by some of the farmers of each county (desiring such action) in preparatory operations. The preparation might be *individual* and *separate*, in noting observations on and answers to the published heads of inquiry—and also, *general* and *combined*, in founding an agricultural society, to meet the views and aid the operations of the Board of Agriculture. Where there is so much more to be done than any one member can possibly perform, (even if possessing far more ability and leisure,) of course the editor cannot count on being able to do more than point out a course of operations to others, and aid their more useful and instructive investigations. But so far as it is possible, he will be ready to meet the requisitions of the persons and communities which may appear to be the most ready to act effectually, and who may desire, and shall signify their desire, to have his personal co-operation. Such invitations are by no means desired as mere matter of compliment, or as evidences that the visits of the member of the Board on a tour of inspection would be *welcome*, and kindly received. No doubt on the latter head would be entertained by any one acquainted with old Virginia. But as a means of properly directing the few and feeble efforts which he may be enabled to make, the member will be aided much by any such positive *indications* of the places where those efforts

are most desired, and will be most certainly aided, and thereby rendered effective.

As was stated before, the constitution of a *working* agricultural society submitted at page 719, of last volume, if the general plan be approved, and whether amended or taken entire, may save much trouble in commencing and organizing societies. And at the time of such organization, or other designated time of meeting afterwards, it may be most beneficial to the cause that the visiting member shall then attend in pursuance of his mission; and it will be his pleasure, as well as duty, so to do, so far as the performance may be in his power. Though not authorized to speak in this respect but for himself, he presumes that the same remarks will apply generally to all his fellow members of the Board of Agriculture in regard to the duties assumed by them.—Ed. F. R.

MAIDSTONE FARMERS' CLUB.

Dr. Robinson concluded his course of lectures on chemistry as applied to agriculture, on Thursday evening. The concluding lecture proved, as we anticipated, of very great interest, as it embraced the testing of some of the fashionable artificial manures, the analysis of soils, &c. Those of our readers who had not the good fortune to be present will doubtless like to acquire a knowledge of some of the simple means used by Dr. Robinson to detect adulteration, more particularly as these require no previous knowledge of chemistry to enable any farmer to apply them. The lecturer's mode of testing nitrate of soda was the following. This salt is sometimes adulterated by a mixture of perhaps one-fourth of common salt (chloride of sodium,) which may be purchased at about one-fourth the price, and which it so closely resembles as to render it difficult to protect the admixture without some chemical process. Nitrate of soda, when pure, burns, if thrown on the fire or a pan of live coals, something like saltpetre. If it be adulterated with salt, however, it burns with a sharp cracking noise, which is greater or less in proportion to the quantity of common salt used, and the combustion is imperfect. Dr. Robinson observed that common salt was actually prejudicial to some soils, but even if it were not, there was no good reason why the farmer should give the same price for it as for nitrate of soda. Another test, which belonged rather to the higher branches of chemistry, was the following. Take a brachin of nitrate of silver (lunar caustic) and dissolve it in half an ounce of rain water. Dissolve a tea-spoonful of the suspected nitrate of soda also in rain water. Mix these two solutions together, and if a white curdly precipitate is observed to form, common salt is present. In this case the precipitate (chloride of silver) is insoluble in the acids, but would be soluble in strong ammonia. Nitrate of soda was also sometimes adulterated with sub-carbonate of soda, which can be obtained at about half the price. The mode of detecting this mixture is by dissolving some of the suspected crystals in rain water, and adding a little strong sulphuric acid (oil of vitriol.) If sub-carbonate of soda be present, effervescence will ensue. With reference to bone-dust, Dr. Robinson said that this was very frequently adulterated with wood dust and other substances, when sold in a very fine state. A simple mode of detecting the presence of saw-dust was by burning a portion of the manure, the bone would not burn, whilst the particles of wood, if present, would sparkle and burn. The farmers of Lincolnshire, partly from the fear of adulteration, and partly from bone-dust when ground too fine passing away too quickly, would never buy bone-dust when ground very fine. Dr. Robinson tested some adulterated bone dust on some burning coals, and the coruscations of the saw-dust were clearly perceptible. He then applied the same test to some bone-dust which had been obtained from the Lenham mills, which was, however, found to be perfectly pure. Another test was the following. Bone-dust, when reduced to a fine powder, was perfectly soluble in hydrochloric acid (spirits of salt,) diluted with three times its bulk in rain water. Twelve hours were required for this experiment, at the end of which, if pure, the bone-dust would be completely dissolved. The lecturer produced a sample of the *guano*, recently introduced into this country from South America. It was the excrement of the flamingo and other birds which feed on fish, and which contained all the properties required in a fertilizer. It could be supplied at about 28*l.* a ton, and was drilled in with the crop in the same manner as bone-dust. This, if it came into extensive demand, would also most assuredly be subject to adulteration, which, however, would be very easily detected; for the guano, if pure, is readily and completely dissolved in diluted sulphuric acid. Dr. Robinson next proceeded to notice the mode of analyzing soils, which subject, however, we have only room to mention. It is almost needless to add that this course of useful, practical, and valuble lectures has given great satisfaction, and much information, to the members of the Maidstone Farmers' Club.

CROP OF CORN-STALKS.

From the American Farmer.

Permit me to mention an experiment made by myself at Washington, on the subject of fodder.—Noticing the statement made in the French periodicals, that the stalks of corn (maize) contained one half as much saccharine matter as cane, and knowing that my ancestors made their molasses during the revolutionary war from these stalks, I sowed four and a half bushels of common corn, broadcast, and harrowed in the same. This labor was easily performed by a single man with a team (including the ploughing) in a day. Having soaked the corn in saltpetre water, it took a rapid start, overtopped the weeds, and covered the ground with a forest of stalks. When fairly tasselled, I cut the same, which I fed to cattle, horses and hogs, both green and dry. If fed to swine after being cured, it was cut and fermented with chop

or bran. Being anxious to ascertain the quantity, I measured a few square feet of the stoutest. I found I had 5 lbs. of green fodder per square foot; this may not seem credible, and it is probably less than what would grow in rich lands at the west; if, however, we consider there are 43 560 square feet in an acre, we shall obtain 217,800 lbs., equal to 108½ tons of green fodder!

I cut the first crop the early part of July, and ploughed and sowed the same land again, and took a second crop two thirds as large, and even tried a third on the same land, but it did not reach over ten inches before the frost seized it. Persons who have only a small patch of ground may try this experiment to advantage and fill their barns with fodder.

In curing stalks, it is recommended to place the small end upon the ground, with the buts upward, to guard against the absorption of moisture from the wet ground. Whoever will try the experiment of cutting flowers, and putting some on damp flannel, or into water, and hanging up others in the sun, will see the advantage of curing fodder in the way I have mentioned. Should any fear the stalks would not stand upon the small end, a few rows could be left to support the remainder.—*Hon. H. L. Ellsworth.*

REPORT ON ORCHARDS.

From the New England Farmer.

The committee appointed by the trustees of the Society for the promotion of Agriculture in Massachusetts, consisting of Messrs. Welles, Prescott, Phinney, Codman and Quincy, having by their chairman examined the orchard of Capt. George Randall, report—

That it appears said orchard was set out in April, 1837. Its extent was about 3½ acres. The soil was good, but rather light, and was in a good state of preparation for the trees. The ground has been since annually cultivated for a crop; the benefit of which, both in the thrift and production of an orchard, seems generally agreed in. The number of trees was 212: their distance apart, 25 feet. There was a doubt with the committee whether the distance might not have been advantageously enlarged even to 35 or 40 feet. In four years they had acquired, several of them, near the roots, about thirteen inches in circumference, and at three feet above the ground, eleven inches by measurement. Many of the trees had extended in the growth of the limbs during the past season, from 15 to nearly 30 inches.

Mr. Randall's communication contains an account of a wash of oil soap, &c., which has been used by him on the trees in this orchard, since they were set out. If this application should operate to prevent the ravages of the borer, it will be of most important utility, as this depredator, with the canker worm, seems to threaten the very existence of our orchards. All which is well and fully set forth in the communication above alluded to, which your committee recommend should be forthwith published. And the committee further recommend that the premium of fifty dollars be awarded and paid to Capt. George Randall, for the best orchard.

All which is respectfully submitted by order of the committee, JOHN WELLS, *Chairman.*

New Bedford, 17th Aug., 1841.

To Benj. Guild, esq., Boston:—sir—I have a young apple orchard in the town of Rochester, Plymouth county, Mass., and ten miles from this place, which I wish to offer for a premium; *and do, by this letter*, offer, or apply for the premium, for the best orchard in the commonwealth, that has been planted out *four years* from the nursery.

Respectfully, your ob't. ser't.

GEORGE RANDALL.

The following comprises Mr. Randall's useful observations:

Description.

The extent of the orchard, 3½ acres; the number of trees, 212; their distance apart, 25 feet; the names of the apples or varieties, 57—as follows: Mela Carla; Flushing Spitzenberg; lady; doctor; English russet; Knight's pippin; crow's egg: Pumwater sweeting; red and green summer pearmain; pear apple; Amory; red doctor; Ruggles' sweeting; French nonpareil; Peck's pleasant; Gravenstein; black gellyflowers; Dawson; Dyre; Coney; Prince's Harriet; summer russet; orange sweeting; R. I. greening; superior sweeting (from the garden of the Hon. Jas. D'Wolfe, Bristol, R. I.); Æsopus Spitzenberg; blue pearmain; Mawney sweeting; Newton Spitzenberg; no core; yellow bellflower; Tewksbury winter blush; Wurner, (from Canaan, N. Y.); summer greening; codling; Porter; Roxbury russett; marigold; Hubbardston's nonsuch; Cooper; seek-no farther; summer sour; Ben; John goodwin; green Newton pippin; Pennock red winter; summer rose; Catlin; Baldwin; fall sarine; bellflower; winter sweeting; honey greening; lily pippin; early sweet bough; nonesuch.

Treatment.

The ground has been planted to roots, every year since, and including 1837, viz.: to potatoes, carrots, ruta baga, sugar beets and mangel wurtzel.

The manures used have been common stable; compost of stable, loam and swamp mud; lime compost, spent ashes, plaster, and a small quantity of saltpetre.

The trunks and lower limbs of the trees have been well washed with oil soap, sand and water, every spring and fall since they were planted out; after which a coat of oil soap has been put on with a painter's brush. The oil soap is made by refining and bleaching sperm oil, and is composed of from 33⅓ to 35 per cent. potash, and the balance sperm oil and impurities from the oil.

The first pruning was done the first of May last past; at which time every tree had the earth removed from around it, to examine for borers, not one tree was found to contain a borer, or any indication of one.

The soil, a sandy gravelly loam, and naturally light.

Observations.

I have noticed that shallow planting with all trees succeeds much the best, and can, I think, be accounted for philosophically. The roots are luxuriating in a good soil, and are more immediately under solar influence.

My mode of planting is as follows:—The mutilated roots of each tree are carefully cut off smooth;

even the small fibrous ones, and engrafting salve but over large cuts. The roots are immersed in water for above one half hour before planting, thereby inducing the mould or loam to become attached to them. The hole to be dug sufficiently large so that every root may extend without bending or being cramped. I put nothing around the roots but surface earth, and that carefully worked in by hand, each root and fibre thus laying horizontally and naturally. I use no manure in setting. One bushel of fine stable manure was put round each tree the first of November, and repeated for two years.

I prefer raising the earth around trees when first planted, above the common level, and thereby give them firmness, than to plant deep, placing a tree deeper than it originally stood, with no prospect of finding the surface earth, thus becoming a moss-covered and stinted tree, whose roots have been searching a cold and uncongenial soil, with little or nothing to give them vitality.

As to the time for planting, from the little experience I have had, I much prefer the spring of the year.

Much has been said and written in favor of autumnal planting. It may be that English authors have done much to encourage this opinion. In Old England I should expect them to succeed well in fall planting: they have but a few degrees of frost compared with New England.

In answer to your inquiries as to the oil soap, I say that from 8 to 10 lbs. of oil soap are put into a common pail, we put on a sufficient quantity of warm water, so that when commingled with the soap, it is about as thick or a little thicker than paint when mixed for use. With this pail of soap, thinned as described, the man having a small tin pail, or bag, or pocket, filled with fine sand, tied round his waist, with a coarse crash cloth and a paint brush, is ready for operating. He first wets his cloth with soap, then scatters on some dry sand, and gives the trunk and branches a good rubbing, after which, with a paint brush, he puts on a coat of the soap, prepared as above, equal to a thick coat of paint. It is well to select for this work the termination of a storm of rain, when the moss, or any roughness on the bark, will yield more readily to rubbing.

Respectfully, your ob't. serv't.

GEO. RANDALL.

The preced ng useful observations were in part made in Mr. Randall's first application to the Secretary, Mr. Guild, for premium, and afterwards enlarged by the request of the committee.

EXHIBITION OF GRAPES TO THE LONDON HORTICULTURAL SOCIETY.

From the London Gardeners' Chronicle.

At an ordinary meeting in Regent street, Sept. 17th, we find the following report in relation to several grapes which were then exhibited:—

Mr. Roberts sent specimens of six different varieties of grapes, grown on young vines two years planted; and certainly for size, and weight of the bunches, we should think they have never been surpassed: a large silver medal was awarded them. The kinds were Cannon Hall Muscat; one bunch weighed 2 lbs. 3 oz., and some of the berries measured 1½ inch in circumference: an extraordinary bunch of the white Nice, which weighed 7 lbs. 12 oz., was not quite ripe, and from its usually being brought to the table in that state, it is little esteemed; when, however, it is well ripened, its berries assume an amber tint, and become high flavored: black Hamburg, black Prince, black Damascus, and black Morocco; a bunch of the first weighing 2 lbs. 5 oz.; of the second, 2 lbs. 15 oz.; of the third, 1 lb. 11 oz.; and of the fourth, 2 lbs. 7 oz. Mr. Stewart had a Banksian certificate given him for his black Hamburg grapes, and a seedling with small round berries. Mr. R. Buck sent a bunch of Cannon Hall Muscat, which weighed 1 lb. 11 oz. The grapes from Mr. Roberts were as fine specimens of cultivation as are ever seen near London, but his Hamburgs wanted color; this defect was avoided in Mr. Stewart's, whose black grapes were as jetty as they ever can be in the brightest and most sunny season. A bunch of Muscat of Alexandria, from A. Brooke, Esq., weighed 1 lb. 12 oz., and was in perfect maturity: a Banksian certificate was awarded for it.

THE IMPORTANCE OF ALKALIES IN SOILS.

To the Editor of the Farmers' Register.

Prospect Hill, Ky., Jan. 1, 1842.

The following quotation is from Liebig's late work on organic chemistry. "A soil, which has been exposed for centuries to all the influences which effect the disintegration of rocks, but from which the alkalies have not been removed, will be able to afford the means of nourishment to those vegetables which require alkalies for their growth, during many years; but it must gradually become exhausted, unless those alkalies which have been removed are again replaced; a period will therefore arrive, when it will be necessary to expose it from time to time to further disintegration, in order to obtain a new supply of soluble alkalies. For small as is the quantity of alkali which plants require, it is nevertheless quite indispensable for their perfect developement. But when one or more years have elapsed, without any alkalies having been extracted from the soil, a new harvest may be expected."

"The first colonists of Virginia found a country the soil of which was similar to that mentioned above; harvests of wheat and tobacco were obtained for a century, from one and the same field, without the aid of manure, but now whole districts are converted into unfruitful pasture land, which, without manure, produces neither wheat nor tobacco. From every acre of this land there were removed, in the space of one hundred years, 1200 pounds of alkalies in leaves, grain, and straw; it became unfruitful, therefore, because it was deprived of every particle of alkali, which had been reduced to a soluble state, and because that which was rendered soluble again, in the space of one year, was not sufficient to satisfy the demands of the plants. Almost all the cultivated land in Europe is in this condition; fallow is the term applied to land left at rest for further disintegration. It is the greatest possible mistake to suppose that the temporary diminution of fertility, in a soil, is owing to the loss of humus; it is the mere consequence of the exhaustion of the alkalies."—p. 195-6.

Although the facts stated in the latter paragraph of the above quotation may not be entirely correct, yet it is worthy of inquiry whether the diminution in the fertility of the lands of lower Virginia may not, in a considerable degree, have been caused by the exhaustion of the alkalies, which existed in the soil, at the time it was first brought into cultivation.

According to Liebig, "the developement of a plant requires the presence, first, of substances containing carbon, and nitrogen, and capable of yielding these elements to the growing organism; secondly, of water and its elements; and, lastly, of a soil to furnish the *inorganic* matters, which are likewise essential to vegetable life."—p. 56. Water is composed of hydrogen and oxygen, and as plants are capable of decomposing and assimilating its elements, (pp. 122 and 125,) there can never be a deficiency in the supply of these to growing vegetation, except in time of drought. During the early growth of plants, carbon is furnished by the humus of the soil, in which they grow, but after they have developed their leaves an abundant supply of carbon is obtained from the atmosphere, by means of their absorbing power. This supply is so great, that in the opinion of Liebig, (p. 106,) they no longer acquire any from the soil, and return even that which they had extracted, during the formation of their first leaves. The remaining *organic* substance, essential to the growth of plants, is nitrogen. This, according to Liebig, is furnished, to some extent, from the atmosphere, in the form of carbonate of ammonia. This substance is very soluble in water, and consequently combines with the moisture of the atmosphere, and is brought down to the earth with the dews, rain and snow, and thus furnishes, to some extent, this necessary element for the nourishment of plants. The quantity derived in this way, though considerable, is not sufficiently ample to produce a flourishing and vigorous growth of plants. To preserve the fertility and productiveness of soils, the *deficiency of nitrogen* must be supplied by the application of putrescent manures, which abound in this ingredient. According to Liebig, this may be so easily effected, that by the application of human excrements, "using, at the same time, bones and the lixiviated ashes of wood, the excrements of animals might be completely dispensed with."—p. 242.

From these views it is quite apparent, that but little effort is necessary to prevent our growing crops from suffering from a deficiency in the principal *organic elements*, which constitute the appropriate food of plants.

But several *inorganic matters* "are likewise essential to vegetable life." Liebig informs us that "most plants, perhaps all of them, contain organic acids of very different composition and properties, all of which are in combination with *bases*, such as *potash*; *soda*, *lime*, or *magnesia*. These *bases* evidently *regulate* the formation of the acids, for a diminution of the one is followed by a decrease of the other."—(p. 148.) Here are four of the *inorganic* substances which are most essential to the growth of vegetables. They are, it is true, combined with *organic* acids, which are necessary to fit them for assimilation, but the quantity of the acid is always regulated by the *base*, so that, if the latter be diminished, the former will be decreased in a corresponding degree; and whenever a *base* is present the acid will be supplied. We have then but to furnish the soil with potash, soda, lime, and magnesia, (if they do not already exist,) when the necessary acids, to fit them for assimilation by the growing plants, will combine with them.

The inorganic substances, mentioned above, are all important in constituting a good soil, but magnesia is, perhaps, less so than either of the others; yet even this is essential to the vigorous growth of many vegetables, for, as we are told by Liebig, "all seeds of the *gramineæ* contain phosphate of magnesia," (p. 93,) and that without this substance "the seeds of corn (wheat) could not be formed."—p. 201.

Many soils are, by nature, abundantly supplied with carbonate of lime. But when it does not exist, in soils, it is very important that it should be supplied. Fortunately, the extensive banks of shell marl, in lower Virginia, afford the means of doing so, and no reasonable expense should be spared in accomplishing an object so important in the renovation of exhausted soils.

Vegetables of all kinds contain, in their composition, more or less of the alkalies. It is very clear, therefore, that this ingredient is indispensably necessary to their growth. If a soil has been entirely exhausted of the alkalies, it must necessarily be completely barren. If it has been only partially exhausted, it will be still capable of producing a vigorous growth of those trees and plants which require only a small supply of the alkalies. But the growth of those which require a large supply must necessarily be much stinted. Thus forest trees, the leaves of which are renewed annually, require from six to ten times more alkalies than the pine or fir tree, and hence pines will grow vigorously in a soil, where other trees cannot attain maturity. (p. 198.) So 100 parts of wheat straw will yield of ashes 15.5 parts, whilst that of barley yields 8.54, and of oats only 4.42.—p. 199.

Plants of the *leguminosæ* family require very small quantities of the alkalies. Buckwheat, beans, lucerne, clover, and lentils yield less than one per cent. of ashes.—p. 204.

These facts are abundantly sufficient to show that the quantity of alkalies, in soils, should be in proportion to the kind of crops intended to be produced. If they exist only sparingly, those crops should be avoided which require a large supply, unless the soil should have been furnished by artificial means. Wheat requires not only more of the alkalies than any other crop, but also a considerable quantity of the phosphates, and is therefore a very exhausting crop.—p. 205.

The alkalies being so necessary to constitute a good soil, the question arises how this ingredient is to be supplied to those soils, from which it has been nearly all extracted. This is to be accomplished first by ceasing to cultivate those crops, which require a large supply of the alkalies; and secondly, by furnishing by artificial means, those soils which are deficient, with a due proportion of these essential ingredients.

Soils are supplied with alkalies, in the natural way, first, by the disintegration of rocks, (p. 195-6) and secondly, by water evaporated from the sea, and falling in the form of rain, snow and dew (p. 160 166-7.) But the supply from these sources is too slow and gradual to be relied upon exclusively, and therefore great efforts should be

made to increase the quantity by the application of ashes. Lixiviated ashes are valuable, as they contain silicate of potash and salts of phosphoric acid, (p. 228); but those which have not been lixiviated are much more so. Both kinds are so highly esteemed, as manures, in Germany, that they are transmitted to the distance of twenty-four miles. In situations, which admit of water or rail-road transportation, they might be carried to still greater distances, with decided advantage.

It is not very material whether potash or soda is furnished to soils, from which the alkalies have been extracted, for these *bases* are readily substituted for each other, where there is a deficiency of either, (p. 149.) Potash may even be substituted, in many cases, not only by soda, but also by lime and magnesia, (p. 200.) This shows what a powerful effort is made by nature to supply plants with alkalies, by substituting alkaline earths, where they are entirely deficient.

I have heretofore adverted to the high estimate formed by Liebig, as to the value of human excrements as a manure. Of these urine is by far the most valuable part. Urine contains several ingredients, which are extracted from the ashes of wood, such as *sulphate* of potash and soda, and *phosphate* of soda. It contains also phosphates of ammonia, magnesia and lime, and several other valuable ingredients for the nourishment of plants. Liebig estimates 100 parts of the urine of a healthy man to be equal to 1300 parts of the fresh dung of a horse, (p. 240.) The saving and application of this manure is, therefore, of very great importance. But if not properly taken care of it is subject to great loss. During putrefaction, carbonate of ammonia is formed, which volatilizes, and passes off in the form of gas, and the urine becomes alkaline. In this way nearly one half of the urine is lost, (p. 237.) Liebig informs us that the carbonate of ammonia, formed during putrefaction, may be converted into a salt, and thus fixed in the soil. This may be effected by strewing a field with gypsum, and then sprinkling it with urine. It may also be neutralized and converted into a salt, which has no volatility, by the chloride of calcium, sulphuric or muriatic acid; or super-sulphate of lime, (p. 238.) As the value of this manure will be so greatly increased, by preventing the ammonia from escaping, which is formed during the putrefactive process, this should never be neglected.

Yours, truly, A. BEATTY.

TO KEEP SKIPPERS FROM BACON.

It is stated in the "Plough Boy," an agricultural paper recently commenced in South Carolina, that if a small piece of sulphur is thrown on the fire every day the bacon is smoking, it will effectually prevent skippers and bugs from entering. We consider this an important matter, and we are strongly disposed to believe the remedy a good one.—*Ex. paper.*

The remedy may be, and no doubt is, a good one, but we doubt its propriety, believing that the fumes of the brimstone will impart a bad flavor to the bacon.—ED. KY. FAR.

[If the remedy be effective in preventing skippers, no fear need be entertained of a disagreeable odor remaining. We have heard that as good effect may be produced by throwing a few pods of red pepper on the fire once in two or three days during the smoking of the bacon. The latter plan has been tried several years in our own house-keeping; and whether that or some other cause operated, there were no skippers in the bacon. In one case, salted fish in barrels, placed in the meat-house after the smoking was finished, was full of skippers, while the bacon remained free.—ED. F. R.]

PAPERS ON CHEAT AND SPELT, OR DARNEL.

[In our recent remarks on spelt, we had to refer to the following articles from memory alone, not having seen them since soon after their first publication, and having lost our volume of the American Farmer containing them. Our friend, Dr. G. B. Smith, the then editor of that work, has since kindly supplied the lost volume; and from it we copy below the whole correspondence which brought out the before published facts in regard to darnel, and its recent introduction into this country. It should be observed, that the writing of the first of these articles, was induced by a preceding long discussion in the American Farmer on the convertibility of wheat to cheat.—ED. F. R.]

Prince George Co., Va., June 6, 1832.

Mr. Smith.—Notwithstanding all the facts and arguments that have been brought forward in the controversy on the origin of cheat, that has lately occupied your columns, it is highly probable that the writers on both sides, and their readers, without an exception, retain the same opinions as at first. We are always too partial to the reasons that support our side of any question, to allow fair play to those on the other; and thence it follows, that when the reasons are strong, yet vulnerable on both sides, no amount of authority, or extension of argument, can convert partizans, or establish the truth. Believing it, therefore, utterly useless, I shall abstain from adducing the reasons that have satisfied my mind that cheat is not the product of degenerated or damaged wheat. But however ineffectual argument may be, a few experiments, made and observed carefully, will serve to decide this interesting and important controversy; and I invite your correspondents, and others who feel interested in the decision, to aid in this mode of obtaining it. Perhaps more satisfactory experiments than the one I shall propose, may be thought of by others; but this alone will suffice to prove that wheat may be changed to cheat, if indeed that opinion is correct.

Select a soil supposed to be the most favorable to the production of cheat. This I consider to be on some sandy slope, which is subject to be too wet in winter and spring. Let a small space, (now clear of growing cheat) be broken up and stirred at different times, from August to October,

so as to cause every seed in the soil to sprout, and then to be destroyed. At the time of sowing wheat, mark off a square of ten or twelve feet accurately into checks of a certain size, (say eight inches,) and at every crossing of the lines plant three grains of imperfect wheat. The grains should be dropped together in a hole made by thrusting a small stick to the proper depth. In the spring, let the plants be cut or grazed once or oftener, but not so late as to prevent the formation of seed stalks. All the causes that are severally supposed to produce cheat would here operate; and if any stalks of cheat should be produced, their situation and number would clearly show whether they sprung from the grains of wheat or not.

Being entirely ignorant of botany, I am not sure that all of us refer to the same plant when we speak of cheat. That name here is sometimes made to include the two very different plants, which will accompany this letter; though one of them (marked No. 2) is now generally distinguished by the name of spelt. The latter is by far the worst pest of the two—and though now less abundant, is, like the cheat, (No. 1,) increasing in spite of all the means yet used for its destruction—and both together threaten the most serious injury to the wheat-grower. The general opinion is, that both these plants are produced from wheat, by the operation of some of the various causes that have been urged by your correspondents who believe in such transformations. But no reasons have been offered, why wheat should sometimes change to cheat, and sometimes to spelt—nor why neither should have been sufficiently plenty twenty or twenty-five years ago, to be a noticeable evil in our crops, though our cultivation then was even more slovenly than it is at this time. The grains of cheat being considerably smaller, and specifically lighter than wheat, may be mostly got out of a crop by good fanning and losing much good wheat with it. But the grains of spelt are so nearly of the same size and weight with those of wheat, that it is impossible to separate them by either the fan or the screen.

Whenever our negligence has permitted cheat and spelt to be scattered over our farms, it seems almost impossible to stop their growth, even to those farmers who suppose that they never are produced except from parent plants of the same kind. The purchase of pure seed wheat (which is already extremely difficult) does not remedy the evil, as the seeds of both cheat and spelt will often remain uninjured a year, or perhaps much longer, without germinating, when buried deep by the plough. But with those who believe that wheat changes to cheat and spelt, it is obviously *impossible* to get rid of the evil; and that opinion is calculated to repress every effort for that purpose. Hence the necessity of deciding by fair and careful experiments, whether these pests are legitimate or bastard vegetable products. E. R.

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Remarks on the above, by the Editor of American Farmer.

The specimens enclosed in the above communication were, *a head of cheat*, (*Bromus secalinus*,) and *a head of darnel*, (*Lolium temulentum.*) The latter is the first specimen we have seen of the plant, and were not before aware of its having made its way across the Atlantic. It is the plant which the English farmers suppose originates from wheat. We have also found a specimen of *Bromus mollis*, soft brome grass, which some suppose originates from timothy. It resembles cheat very much, except that it is more delicate, with smaller heads and seeds. It is somewhat curious that this timothy cheat, as it is called, (soft brome grass) was found in a wheat field, where there never had been a spear of timothy.

Apropos. A farmer who is a firm believer in the degeneracy of wheat to cheat, informed us that he saw a whole field of cheat, and that the owner was cutting it for hay. It proved to be a fine crop of rye grass—*Lolium perenne.*

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Poplar Grove, June 30, 1832.

Mr. Smith:—I herein enclose you two heads of darnel or cheat, the one with a head resembling oats, is that kind which has been known in this section of the country, time immemorial—the other is a plant which from its peculiar form of growth, resembling the teeth of a saw or notches on a board, has acquired the name of the *notch* darnel. It first appeared on Kent Island, soon after the British encampment on that Island, during the late war, from whence it has been carried by birds, and has spread considerably elsewhere. It has a larger and heavier grain than the common darnel, and hence it is with more difficulty separated from the wheat in winnowing. How far its more farinaceous character renders it a better food for stock than the old darnel, I know not. Like the Hessian fly which soon appeared after the encampment of the British on Long Island, it is believed to have been introduced by them; but whether with more truth or not, I am unable to say. I should be glad, if you can furnish them, to have the true botanical names of both these plants, and also the vulgar names they are known by in England; where I presume they are both known, and where the latter may probably be in cultivation for some edible purpose, as I believe it to be extremely productive.* It has long been a matter of surprise to me that intelligent farmers, and particularly my highly intelligent friend Muse, should believe that wheat is capable of turning to darnel. It is against the order of nature, and I venture to assert, it will be against all *fair* experiments to produce the change. It cannot, in my opinion, be in the power of man or beast to effect it. If you sow *wheat on a clean soil*, you will have wheat, and if you sow darnel you will have darnel, without any danger of its *turning back*, to the end of time. A sound rule ought to work both ways; but you can no more convert darnel into wheat, than wheat into darnel.

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T. Emory.

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By the Editor of American Farmer.

We are much indebted to Col. Emory, of the Eastern Shore, of Maryland, for the communi-

* Is it German speltz, tares or vetches, neither of which plants, although grown and known in Europe, I have any knowledge of? The samples I send are unripe.

cation on another page relative to cheat. The "heads of darnel" enclosed in the letter, are those of common cheat, and the darnel of the English. Cheat, in England is called smooth rye; in America, cheat, chess, and sometimes darnel. Its botanical name is *Bromus secalinus*, belonging to the 3d class and 2d order of Linnæus. But there is another species of bromus or cheat very common in this country, and so nearly resembling common cheat that it is often mistaken for it. It is the *Bromus mollis* of Linnæus—soft brome grass of the English. The only material difference between this plant and the true cheat, is the slenderness of its growth and smallness of its seeds, by which, when together, the two species are easily distinguished. The soft brome grass is supposed to spring from degenerated timothy, by the believers in such changes, as it is most usually found in grounds adapted to timothy.

Darnel, the kind mentioned by Col. Emory, as having first appeared in Kent Island, (in the Chesapeake bay) soon after the British encampment on that island, of which Col. E. sent a specimen, is the *Lolium temulentum* of Linnæus, belonging to the 3d class and 2d order of the Linnæan arrangement. It is of the same genus as the celebrated and excellent perennial rye grass, and this latter and eight other species are all called darnel in England. Some farmers in England, and other parts of Europe, still suppose that this darnel originates from degenerated rye and wheat, whence probably the common name of rye grass.

By some persons in Virginia, the darnel (lolium temulentum) is called *spelts*, but improperly, as there is a species of wheat, *triticum spelta*, which is called *spelt* in England; but no other plant is called by any name resembling it. Spelt is grown in some parts of Germany, on high land, where common wheat will not ripen. It is improperly placed in the genus triticum, (wheat,) as it has distinct generic characters. It has a stout straw, almost solid, with strong spikes or heads, and chaff adhering firmly to the grain. The grain is light, yields but little flour, and makes poor bread.

The tares or vetches of England, are very distinct plants from cheat and darnel. They are the *Vicia sativa* of Linnæus, and in their characters and habits resemble the common pea.

We rejoice that Col. Emory has been able to trace the origin of this new pest, (darnel,) as otherwise our wheat would have been degraded by another suspicion of its mutability. It has, however, already suffered in this way, as will have been seen in an article in the 16th number of the Farmer, page 134. The origin of darnel having been traced to Kent Island, its existence there is easily accounted for:—it was doubtless brought there in the horse provender, in the oats; and as it is a common practice to feed the *tailings* of wheat to horses, it is very probable that quantities of that article were sent over for the use of the British cavalry horses, and thus left on the island where the army encamped.

We are glad to add the name of so respectable a gentleman as Col. Emory to the list of those who believe in the immutability of wheat, and of every other created thing. Vegetables may be improved in their qualities, may be rendered worthless, and may be hybridized, by high or low cultivation, and by cross impregnation, but their distinctive characters, their organic structure, must always remain the same—without a shadow of change. The short fine hair of the leaves can no more be taken from cheat nor added to wheat than a regular ear of corn can be produced upon broom corn; than watermelons can be produced from pumpkin vines, or any other such irregular operation.

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Prince George County, Va., Oct. 23, 1832.

Mr. Smith:—When I sent to you for examination a head of *darnel*, or what is here called *spelt*, I was surprised to learn from your answer that its existence in this country is so limited, as it must be, as it had not before fallen under your observation. It is a subject for congratulation, that our country generally is yet free from the worst pest that attends the cultivation of wheat. As soon as I was informed by you that our *spelt* was the English weed *darnel*, I immediately attributed its presence here, to the importation of English race-horses, which have been frequently landed at city Point in this county; and darnel was no doubt brought in their oats and litter, and by that means scattered over our country. By the way, a Spanish thistle full of burs and sharp thorns, was brought to the same place, and also to Petersburg, in the fleeces of Merino sheep; and having been permitted by neglect to spread, threatens to add another serious and endless annoyance to our farming. Though darnel has not been known here so long as twenty years, as a considerable injury to wheat, yet the opinion is already prevalent that this plant, like *cheat*, is merely degenerated wheat. These erroneous opinions are calculated to repress all vigorous efforts to root out the evil; and if darnel should be allowed to spread throughout the country, it will be impossible to get rid of it. By great care, perhaps we may relieve ourselves of these pests, if the attempt is made without more delay. Nothing will clear land already set with darnel, but carefully pulling every plant out of the crops of wheat, and sowing perfectly clean seed.

Darnel is poisonous in a very high degree. I have heard from good authority, of three several cases in this county of persons being made alarmingly ill by eating a single meal of bread made of wheat containing a large proportion of darnel. They were immediately seized with violent sickness of the stomach, convulsed limbs, &c. and it was thought by those who witnessed the effect, that nothing but the speedy use of active medicine, saved the lives of the persons so affected.

We farmers are apt to complain of the millers, for the many and strong objections that they make to the condition of our wheat when offered to them for sale,—and we complain with some reason, because such objections are urged irregularly, capriciously, and are very much influenced by the demand and price. But if some fixed and regular rule could be adopted, which would impose a heavy but uniform penalty on the farmer for every kind of impurity in his wheat, I have no doubt but it would be ultimately, if not immediately, beneficial to every farmer, as well as to the miller, and to the whole region of country in which the rule was adopted, by raising to the highest grade the character of its wheat and flour. When wheat of average quality sells for one dol-

lar the bushel, a crop free from all impurity ought to be worth ten cents more; and the foulest that would be considered "merchantable," would be worth ten cents less—making a difference of twenty cents between the best and worst quality. If prices were always proportioned to these values, the difference would be a sufficient premium for the care necessary to keep crops clean. But unfortunately such is not the case. The purchaser will readily admit that there is this great difference in the intrinsic worth of the best and worst wheat; but his prices must be regulated by his expected sales—and he cannot afford to add to the average price above five cents for the best, nor need he deduct more than the same amount from the worst. Thus the average quality of wheat in any certain market, serves in a great measure to fix, or to approximate to it, the prices of both the best and worst crops. Therefore, the most slovenly farmer gets for his wheat five cents more than its intrinsic value, and he who sells perfectly clean wheat gets five cents less. This state of things amounts to a bounty being offered for foul crops.

A remedy for this evil, and a great and rapid improvement in the general quality and cleanness of our wheat, might probably be effected by something like the following plan. Suppose the millers of some considerable wheat market, together with some of the principal farmers who usually supply them, to consult and agree upon the full value of the injury that would be caused to clean wheat, by admixtures of either cockle, garlic, cheat, darnel, &c. For example, it might be agreed that, in a sample of one pound of wheat, it should be considered that ten grains of wheat should be deducted as a fair equivalent for the presence of one grain of darnel, or for two of garlic, three of cheat or cockle, or for ten of oats or rye, besides all the impurities so found; and that a proportional deduction shall be made from the price offered for pure or clean wheat. The selection of fair samples, and the trial of them, would be troublesome, it is true; but much less so than the usual chaffering, and the frequent dissatisfaction caused by the want of fixed and certain rules.

Let us now suppose some such *tariff of filth* to be in operation, and observe its probable effect. Suppose that, without such regulations, the demand for flour would have fixed the price of wheat of middling or average quality at one dollar; and that the amount of impurities in the sample, rated as proposed, would take off ten cents from the bushel. It may be considered by many that this would reduce the market price to ninety cents. Not so: the effect would be to *raise* the market price to one dollar and ten cents, which would be obtained by the few who could offer clean wheat—and from which the seller of average wheat would still obtain one dollar, after having ten cents deducted—and the foulest crops might suffer a deduction of twenty to thirty cents. The average of all the prices would remain the same, but would be equitably proportioned to the value of each crop—and thus hold out the strongest inducements to every farmer to aid in improving the quality and character of the wheat of the country at large.

Unless most of the farmers of a particular district unite in the endeavor to root out cheat and darnel, it will scarcely be possible for any one to succeed in the attempt. Persons who have always sown clean wheat, (or at least supposed so,) cannot conceive how the seed of cheat or darnel could get upon their fields, and therefore attribute their appearance to a transformation from wheat. But, without resorting to this mode of explaining the fact, there are abundant means by which a farm may be supplied with these pests, if they are abundant in the adjacent country. From various reasons, most farmers frequently procure seed wheat by purchase—and it is already almost impossible to obtain any near this county, entirely free from both cheat and darnel. It is true that there are plenty of crops that are *called* clean—and few will deny them that character if they contain only one grain of cheat in a handful of wheat; yet that small proportion would furnish a flourishing plant of cheat for every cast of the sower, and insure a much greater proportion in the next crop. Being subject to none of the many disasters that destroy so large a proportion of the plants of wheat, the hardy cheat and darnel show an increase of quantity in every successive crop, though much the greater part of their seeds are fanned and screened from the seed wheat. But this is not all. The grains of cheat and darnel left by the fanner in the chaff, and *tail-ends* wheat, are given in feed to hogs and other stock; and from their hard and firm covering, they frequently, if not generally, pass through the animals uninjured, to grow wherever dropped. This perhaps prevents darnel being as poisonous to beasts as it is to man. Many of both these seeds are also left in the straw, and carried out with the manure made from it. If the manure is well heated by being heaped to ferment, only all the seeds in the outer parts of the heap will germinate—or the whole will, if carried out in unrotted manure. If it is ploughed in a good depth, the seeds of darnel and cheat will remain without sprouting a year, (as I have experienced,) and perhaps much longer, and grow when afterwards brought near enough to the surface. Thus, when manure containing those seeds is ploughed in for corn, the best tillage and weeding may not prevent their springing plentifully among the succeeding crops of wheat. For these and other reasons, if cheat and darnel get on any part of a farm, they will soon spread to every acre, if great care is not used to arrest their progress.

But suppose a farmer by extraordinary care and labor to eradicate these pests, and to avoid every act by which he may introduce them again. Still by various means he will be in danger of receiving other supplies. He cannot avoid visits from his neighbors' horses, oxen, and sometimes stray hogs, carrying the seed in their bowels, and bestowing them wherever they go. Nor can he avoid lending his wheat bags, and his fanner, all of which are likely, and the last is sure, to be returned with cheat or darnel, unless the contents are sown over his farm, as they are jolted homeward. Your regular borrowers of fan-mills are generally well stocked with cheat and darnel. These chances for a supply are greatly increased if a private road, for neighborhood use, passes through a farm; and still more, if a stream, subject to overflow low grounds, and which has traversed other farms above. E. R.

For the Farmers' Register.

GRASSES AND GRASS CULTURE OF FRANCE.

Mr. Editor—Here is a brief account of some of the grasses which are mostly used in France, taken from 'Le Bon Jardinier,' for the 'Farmers' Register.'

Ivraie vivace, Ray grass of England, Lolium perenne, Darnel. Of all meadow grasses, this is that which is most generally sown in France. It is very much used under the name of *Gazon Anglais*, (English turf,) to form a covering of green. In farming, the results that are obtained from it are infinitely various, on account of the climate, the soil, and other local circumstances, which is without doubt one of the causes of the great difference of opinion in regard to its merits. In general one may admit that the ray grass is not (in France particularly) a good plant for mowing. There are however exceptions; and one often sees it in low and moist meadows, from two to three feet high, vigorous, well provided with leaves, and not coming to maturity sooner than the other grasses. In such cases it should be esteemed, and may be regarded as equal to any hay that you may find. One should then partially use it in sowing similar meadows; but without these favorable circumstances the hay is bleached, and is perfectly dry, and I have seen horses refuse it, although cut when just commencing to flower. It is then as pasturage that it is desirable to use it on all lands where it cannot obtain sufficient humidity to produce good hay. On level lands, particularly on those which are rather stiff than light, it will render good service in this manner. Its precocity, its facility of recovering after severe grazing, and of shooting again and strengthening itself, although much eaten and trampled, together with the nourishing and fattening qualities of this grass, are well known by experience, and assign it a useful place among grasses. In situations and on lands that are dry and scorching, the ray grass, whether as hay or as pasturage, is but an indifferent resource; and in every case its success and its product are always proportioned to the degree of humidity of climate and of soil. In England, where for this reason its success is much more general than in France, they often form, with a mixture of ray grass and red or white clover, a meadow destined to last from two to four years and even more. If one sows a field in ray grass, the addition of these two plants in small proportion is always desirable. For pasturage, they add only the white clover; but one might add with good effect the *Tréfle fraise*, and also the *Lothier corniculé*. One hundred pounds of seed are amply sufficient for a hectare of meadow land; for grazing, twice that quantity is necessary. They sow it in February and March, or in September and October. But where a small piece of good land is cultivated, and is to be irrigated with care, it may be sown at any season of the year.

Ivraie d'Italie, Ray grass of Italy, Lolium Italicum. Switzerland and the northern part of Italy have recently furnished us this grass, which has been cultivated for some years with much success in those countries. Some regard it as a variety of the ray grass, (Lolium perenne,) others as a distinct species. This last opinion appears to me to be the most probable: the plant, although resembling our ray grass in the head, differs widely in other respects. It does not mat itself on the ground as does our variety. Its shoots and its leaves, rising up more perpendicularly, are larger and of a more bluish green, the stalks more elevated, and the flowers always bearded. The *Ivraie d'Italie* has also a disposition to put out and grow again after it has been mowed, which is altogether foreign to the other variety. They announced it as vivacious, and lasting for three or four years, but from the observations of Mons. de Dombasle, and those which I have made myself, or which have been communicated to me, it does not appear that it affords good produce for the sickle for more than two years. It is also objectionable because it is liable to the mildew and the spur. Opinion is not yet decided as to the nature of the soils to which it is best adapted, and particularly as to the power it possesses of succeeding on dry and indifferent lands. I could mention many remarkable instances of its success, but the greatest number of attempts give me reason to believe that it requires a moist soil, or at least a cool one, which must be at the same time rich. It is probable that it will be a long time before we can arrive at any definite conclusion about the habits of this plant, because it offers strange inequalities and disparities in its vegetation and its results. Some persons attribute this to a difference of varieties; already speculation has seized this idea, to offer seeds of the really good varieties of the *Ivraie d'Italie* in opposition to what are bad. I do not believe the distinction well founded; but when I have studied it by comparative attempts, I shall endeavor to make public any conclusions that I may derive from my essays. It is however certain, that, whenever the *Ivraie d'Italie* thrives and flourishes, its produce and its vigor of vegetation are truly wonderful. I have known a piece of ground sown in May to give in the same year three good mowings of hay. The rapidity of its growth prevents its being sown with the small grain crops, as it will outgrow them, and perhaps stifle them. It is therefore necessary to sow it alone in the autumn or in the spring, at the rate of from forty to fifty kilogrammes per hectare.

Panis élevé, Herbe de Guinée, Panicum altissimum, Guinea grass. The great reputation of the Guinea grass in America has long since induced attempts to be made to introduce its culture into France. These experiments however did not succeed, probably because they were made with seed of plants which came from the Caribee islands; but, since 1820, some seeds obtained from Carolina have had much better success. At Paris and at Geneva, the plants which were obtained from these seeds have withstood the severity of our ordinary winters, and some resisted the rigorous frosts of 1820, 1830, 1832. Mons. le Compte de Mosbourg has sown it with success on a lot in the environs of Cahors. The plant, although producing but few seeds, has with me for many years propagated itself, and may be looked upon as having become acclimated. In America the Guinea grass is propagated by slips, which are obtained by separating the tufts that become very large, each one affording a great number of cuttings. This method is equally practicable here. If one wishes to raise it from the seed, it is necessary to sow them about the last of April or first of May, on a bed with a southern exposure.

In June they lay the border off in rows twelve or fifteen inches apart. The second year it attains perfection, and presents a mass of stalks and leaves of an extraordinary abundance, and often more than four feet in height. It is principally used as green food for cattle and horses. The name, Guinea grass, has been improperly applied to some other plants, particularly to *Panicum virgatum* and the *Panicum coloratum*.

Paturin, Poa des Prés, Poa pratensis, Spear grass. Among the *paturins* there are many plants interesting in different respects, but especially on account of the fine quality of the forage which they afford. The variety known as the *Paturin des prés* is perhaps the most difficult to appreciate. Few grasses are so common, or present themselves under so many different aspects. You will see it dwarfish and arid on the sides of roads and ditches, and large and succulent on moist meadows, but always very precocious, and very much inclined to spread. These two peculiarities render it often more obnoxious than useful in mixtures formed by accident, and should prevent is being employed in the formation of meadows without circumspection; although its hay has the reputation of being very excellent. It will be best, perhaps, to sow it alone, or to associate it only with the fox-tail, (*Alopecurus pratensis,*) and the common paturin, in moist lands, which, although rather later, yet require to be cut about the same time; and on dry soils with the *Dactylis glomerata* and the *Avena elatior*, and a little of the *Anthoxanthum odoratum*, and some of the leguminous grasses, taking care in the last case to mow it at an early season. When sown alone, from thirty-five to forty pounds of seed per hectare are requisite.

Le Paturin commun, Poa trivialis, Pasture grass, is as common as the preceding, and grows like it on lands of very different nature, it abounds on lands that are dry, and in artificial meadows, and yet humidity is so favorable to it, that it is often found in situations so moist that they are almost aquatic. I prefer it to the *Poa de prés*. It is necessary to mow it early, because it will wither very quickly after the flowering is over. About thirty pounds of seed per hectare are sown.

Paturin comprimé, Poa compressa, Blue grass, I should not mention, but some good works have lately adopted an old error of opinion about it, in supposing it to be the bird grass, which is extolled as forage, but about which it is almost impossible to get any correct information. I have made many attempts to obtain this bird grass, and to learn precisely what it is, and the result has been to satisfy me that, if a plant ever was cultivated in Virginia under that name, that plant was not the *Paturin comprimé*, which is a small grass that grows about walls, and in very dry places, the sparse leaves and stalks of which do not at all comport with the abundance and permanence of the verdure which is attributed to the bird grass. From the imperfect description that I have received of this grass I conclude that it is an *Agrostis*, and the similarity of name induces me to believe that it is the same with the *herds-grass*, which also is an American plant.

Paturin des bois, Poa memoralis seu angustifolia. In the experiments that I have made for several years with many different kinds of grass, the *Poa des bois* has always shown with advantage. It is rather the earliest of grasses (at least of those which are cultivated) to develope its leaves in the spring. Annually in March, it presents a mass of new and vigorous verdure, whilst the sap of the most of the other species of grass has not commenced to rise. Although the leaves are short, yet they are so numerous and so nutritious that they afford a very good mowing, even on sandy and indifferent soils. The hay which it gives, in respect to its fineness, its softness, and its verdure, excels that which is obtained from almost all of the other varieties of grass. The Paturin des bois is in other respects homely, durable, and not hard to suit with a proper soil, provided it is dry and sound, for I have never found it in low and humid meadows. A remarkable peculiarity which this grass possesses is that it grows voluntarily in the woods, and will maintain itself very well in the shade of the undergrowth. It grows also with much vigor on open lands, and even on walls, where it is often found, which proves it to be of uncommon strength of constitution. Notwithstanding these good qualities, the Paturin des bois has one most serious defect, that of not covering the ground well; its shoots, although numerous, grow always perpendicularly, and do not spread over the ground as those of many other grasses, but particularly the ray grass. Despite this objection, I regard it as one of the best of our indigenous grasses, either for early pasturage, or for sowing in meadows which it is intended shall be composed of the best and most superior plants. I have also found it very well adapted to afford verdure in the thickly shaded portions of pleasure grounds, where it will thrive for many years, whilst the ray grass and other turf grasses will quickly perish. Some forty pounds of seed per hectare are requisite.

Phalaris roseau, Phalaris arundinacea. Although this plant bears the appearance of a reed, it is very different in its qualities. Its leaves, cut when young, are tender, well stored with nutriment, and furnish excellent food for cattle. The *Phalaris* grows originally only on aquatic or very humid soils, but the following example will show that it will succeed in soils of a totally different nature. Mons. Jacquement Bonnefond of Annonay, a most worthy and intelligent farmer, has described to me a plantation of the Phalaris, which he has made with complete success on a very dry and gravelly hill-side, where verdure was never before seen. He obtained in this situation with this plant, not only vegetation, but two or three small mowings of hay, which the cows ate most heartily. This experiment was made with the variety called the *petit roseau panaché*, which is cultivated in some gardens as an ornamental plant. It has been repeated with the ordinary variety with success, by Mons. Descolombier of Moulins, whose farming is ever open to useful experiments. I, also, have some of the Phalaris, which is pretty well taken in very poor chalk land, where it resisted the drought of 1832. The discovery of Mons. Jacquement might bring about interesting results in farming.

Vulpin de prés, Alopecurus pratensis, Foxtail. Almost all observers in France, in England, and in Germany, who have studied meadow grasses, agree in regarding the *Vulpin* as one of the most precious of all, on account of its precocity, and the abundance of its forage. In the crops that I have

made for the grain, I have become acquainted with its qualities, and no grass better deserves to be brought into culture. The Vulpin loves humidity. In former editions of this work I have said that it could not be cultivated with other grasses, on account of its precocity. Later observations have caused me to change my opinion on this subject. Although the head is ripe much sooner than the other grasses, yet its vegetation continues, and a long reproduction of leaves renders it green and succulent, when the ray grass, and other good varieties, are ready for the sickle. It may be sown early in the autumn, or in the spring. About forty pounds of seed per hectare are necessary.

CURE OF MANGE IN DOGS.

To the Editor of the Farmers' Register.

In the last "Southern Planter," a writer gives us a remedy for the mange in dogs. Although in common life things which are considered valueless are compared to a dog, yet the fidelity and affection of that valuable domestic animal have always made him an object of gratitude and care with man. If we should disregard his comforts, or neglect to alleviate his maladies, we should be wanting in those noble qualities in which he has set us the example.

Some years ago, when residing in the upper country, I had a very beautiful and favorite pointer. He became mangy over his whole body, and very much reduced, so that I expected to lose him. I had a friend residing in the neighborhood who owned a tan-yard. He was kind enough to take my dog for a week or ten days, and dip him in the tan-vat several times each day. He was then rubbed well with a mixture of tanner's oil and tar, and sent home. In the course of a short time the scales began to peel off, and new hair to grow out. He soon became the sleekest and prettiest animal I ever saw, and was never again affected with the disease, or even visited by vermin for a year or two. I often thought, by his playful antics, that he was conscious of his obligations, and wished to express with kindness a gratitude which he felt; but the obligations were transferred to me, for he lived to afford me many an hour of sport and many a nice dish of game.

The disease is evidently infectious, and those that are subjects of it should not be permitted to consort with those that are not.

I hope the few brief remarks above, may lead to the relief of many a valuable animal for the mutual protection and enjoyment of himself and owner. W. J. DUPUY.

P. S. In the case above related, I first resorted to the usual remedies, such as sulphur, &c., without effect.

For the Farmers' Register.

EXPERIMENT OF FATTENING HOGS.

Surry county, January 1, 1842.

For the benefit of those persons who are giving twenty and thirty dollars a pair for *genuine* Berkshire pigs, I will give the result of an experiment made on feeding a lot of half Berkshires. These hogs were a cross of the Berkshire hog and the China, than which no hog, in my opinion, will yield more meat proportional to the quantity of food consumed. I must confess that I was somewhat disappointed with the result, as the pork cost me a good deal more than I expected it to do; nevertheless, I will give a detail of the trial, and let every one judge for himself.

On the 24th October, 1840, a lot of half Berkshire pigs, just eight weeks old, was separated from other hogs when fed, but suffered to run at large in a standing pasture, which was bad enough, producing little else than broom straw and poverty grass. The corn was ground into hominy, and measured out to them daily; and they were fed in this way until the latter part of July, when for several weeks, nearly two months, I put them on half rations, as they were allowed as much apple pomace during that time as they would eat. A few squashes and pumpkins, &c., were also given them in the summer and fall. And on the 30th of November they were slaughtered, being then just fifteen months and five days old. On the following day they were weighed, and averaged 374 pounds, which, at 4 cents, (the price Kentucky pork sold for in this county this winter,) amounts to $14.96. They ate 37 bushels 1½ peck of corn each, at 60 cents per bushel = $22.42½. So it will be perceived that I sustained a loss of $7.46½ on each hog. This startled me, and it was some time before I could convince myself that there was no error in the calculation; but it was fact; there could not be a shadow of doubt about it.

Hogs can be and are raised much cheaper than those mentioned above, but under dissimilar circumstances. If a farmer provide good clover for his hogs to graze, they will consume scarcely half as much grain; or if he be surrounded by a forest of oaks, they are easily and cheaply kept on mast, and perhaps this is the cheapest way hogs can be raised in eastern Virginia.

From the foregoing experiment I am well satisfied that, so long as pork can be bought for $4 per hundred, and corn sold for 60 cents per bushel, neither the Berkshire nor any other hog can be raised with profit, when corn is to form the principal article of food. It matters not whether it be given in the form of swill, be steamed, or baked into bread, it will vary in cost but little, and ultimately prove a sinking business.

BOLLING JONES.

FOURTH REPORT OF THE AGRICULTURAL SURVEY OF MASSACHUSETTS, BY THE REV. HENRY COLMAN.

We have had the gratification of receiving, from the author, the volume under the above title which has just been published, from which we shall make sundry extracts for the present number. The report is a new evidence of the zeal and ability of the Agricultural Surveyor of Massachusetts, and of the utility of the survey. Nevertheless, we find that it is the last report that is to be expected; the legislature, in a paroxysm of "pen-

ny-wise and pound-foolish" economy, having cut short the survey, and surrendered the honorable distinction before enjoyed by the commonwealth of Massachusetts, of being the only state of the union that had established so excellent a means of promoting agricultural improvement.

Mr. Colman has been invited to take charge of the 'New Genesee Farmer,' and will conduct its editorial department.

GRASS AND HAY IN FRANKLIN COUNTY, MASSACHUSETTS.

From the Fourth Report of the Agriculture of Massachusetts. Counties of Franklin and Middlesex. By Henry Colman, Commissioner for the Agricultural Survey of the State.

Grasses.—Grass may be considered as the principal crop. In the hill towns, and what may be called the uplands, the artificial grasses are cultivated, such as clover, (*trifolium pratense,*) herds-grass or timothy, (*phleum pratense,*) and red-top, (*agrostis vulgaris.*) In general, three pecks of red-top, one of herds-grass, and four to six pounds of clover-seed are sown, when land, which has been cultivated, is laid down to grass. The land is laid down with some grain, either wheat, rye or oats; and the grass-seed is sown with the grain. Barley is scarcely grown at all in the country.

The clover predominates the first year; the herds-grass the second. The clover is nearly extinct at the end of the second year; and the red-top, intermixed with various natural grasses, which spring up spontaneously, furnishes a permanent matting to the soil. In general, not nearly enough seed, particularly of herds-grass, is sown. The consequence is, that the product is very coarse the first and second year, which it would not be, if treble the quantity of seed were sown. Several farmers in the state, whose authority is entitled to respect, practise a much more liberal mode of sowing; and find an advantage in doing it in the improved quality of the hay. The average yield the first year is from two to three tons; the second it may be estimated at two tons; and for a continuance of three years after that, in favorable seasons and locations, it may be rated at one to one and a quarter ton per year. These lands in general, are mowed once only in a season. There is an instance in Conway, of a piece of moist land lying at the side and foot of a hill, where the soil is deep, being a rich mould, resting upon a substratum inclined to clay, on which, by copious top-dressings of barn manure, the product has been kept up, and averages yearly nearly three tons to the acre. Of peat lands, I know of no considerable tracts in the county; and, as yet, no great attention has been paid to the draining, either by open or under-ground drains, of wet lands. The quantity of this kind of lands is not considerable; but such improvements, where required, would be amply compensated.

The next quality of grass lands are the alluvions on the Deerfield and the Connecticut rivers, and small patches on their tributary streams. The alluvial lands on the Connecticut are rarely over-flowed, excepting at the breaking up of winter; and they are, therefore subjected to a course of cultivation the same as other arable lands. The rotation on these lands is commonly the first year corn, or potatoes with manure; the same the second year, and the third year oats, pease and oats, rye or wheat, with grass. Where broom corn is planted, it generally follows a crop of Indian corn; and is continued often two or more years on the same land. The annual deposites made upon these lands by the flood are not of great advantage, and the fertility of the soil can by no means be kept up without manure.

The low alluvial lands on the Deerfield meadows, essentially differ from these from a circumstance already alluded to. The waters on the low Deerfield meadows are set back from the great river, and remain comparatively quiet; and in addition to this, the banks and hills bordering the Deerfield and its tributaries are more steep in general than those on the Connecticut. Much more enriching matter is thus brought down from them to the river in times of rain and freshets. These lands, therefore, annually and commonly oftener over-flowed, constituting the lowest meadows on the Deerfield river, are never ploughed. They require no manure; and being entirely alluvial and receiving the richest deposites, are of extraordinary and inexhaustible fertility. These meadows are always mowed twice; in some cases, three times; and the annual yield is generally estimated at three tons to the acre. The hay on these meadows is of a very fine quality, known there familiarly as the English bent (*agrostis alba*). It is a natural grass, and forms a fine and impervious sward.

The upland intervales on the Deerfield, are devoted to cultivation; and most of this land is seldom suffered to rest. For hay, the main dependence is upon the low flooded meadows; and those low and uneven portions, which it is difficult to reach with the plough.

An example has been given to me of the product of one of these low meadows in Deerfield containing nine acres, at a place called Old Fort.

The first crop of hay was,	- -	25,325 lbs.
" second crop,	- - -	15,120
		40,445 lbs.
The hay was sold and delivered as soon as cured, at nine dollars per ton,		$182 00
The fall feed, sold for	- - -	4 50
		$186 50
The whole labor was performed by contract at four dollars per acre for both crops,	- - - - -	36 00
Leaving a balance in favor of the land of	- - - - - - -	$150 50

The hay was considered as sold at a low rate. The same quality of hay in the following winter brought 13 dollars per ton.

The land has been estimated at one hundred dollars per acre. No manure has been put upon the ground. The produce in this case, was not more than an average crop. This yield was at the rate of 4,494 lbs. to the acre. First crop, 2,813 8-9 per acre; second crop, 1.657 7-9 lbs. per acre. This constitutes some of the best land in the meadows. There is that, however, which is deemed even more productive.

The hay from these natural meadows is exceedingly coveted by the cattle and remarkably nutritious. It consists of a very great variety of plants, but what is called the English bent (*agrostis alba,*) prevails with a slight intermixture of clover. I do not know what has given it the name of English, as it is without doubt indigenous to the soil. It requires to be cut early, otherwise it becomes hard and wiry. Some of the farmers are in the habit of making or drying this hay much less than formerly. It was considered best to dry it as much as possible; but this is not now the case. Hay, wet from external moisture, whether dew or rain, always suffers and becomes mouldy and sour, if packed away with any of this dampness upon it. But hay when perfectly dry may be put away with much of the sap remaining in it; and though it sweats severely in the mow and becomes somewhat discolored from the heat, yet it is not the less relished by, nor the less nutritious to, the fatting cattle. This is the actual experience of some of the best feeders; but though no evil may come from giving such hay to cattle soon to pass into the hands of the butcher yet in the condition in which it is often given to fatting cattle, it would be quite pernicious to horses. There is reason to believe, that hay is generally too much dried; and with some farmers, the practice of curing it in the cock is much approved. In this case, the hay being perfectly dry from any external wet, after being slightly wilted in the sun, is made up into cocks. The second day these cocks are opened and afterwards doubled. In good weather it will soon become sufficiently cured to be carried safely into the barn. In bad weather it is in a great degree secure from the effects of rain, if the cocks are made up with care. In this way, the hay is never so much dried as to be broken; nor are the leaves and seeds, as in the common way of making hay by tossing it about a great deal, scattered and lost. Two of the best farmers in the county, residing in Bernardston, are of opinion, that herds-grass should not be cut until it is ripe, and the seed perfectly formed. They speak with confidence in this matter from having made many experiments in the fatting of cattle. They are persons, whose word is above question and whose judgment is entitled to great respect.

ON THE QUESTION OF TOPPING AND STRIPPING CORN. HARVESTING THE CROP.

From the same.

The subject of topping the stalks has been much discussed; and its inexpediency may be considered as settled. A Pennsylvania farmer, highly intelligent and observing, made an experiment with a view accurately to test this point. Taking three equal rows in the same field, topping two and leaving one untopped, the result was as follows:—

"Produce of the row which had not been topped, nine bushels and five-eighths of corn in the ear.

"One of the rows which had been topped and stripped,—that is, the blades of the plant taken off,—measured seven bushels and six-eighths; and the other, topped and stripped, measured seven bushels and three-eighths of corn in the ear. Thus it clearly appears that mutilating the corn plant before its fruit is perfected, is a very injurious practice."

The experiment of Josiah Quincy, of Quincy, Norfolk county, was to the same effect. This was upon carrots, and I shall give the account in his own words:—

"It was stated confidently, by some English writer on the cultivation of carrots, that the tops might be cut early for the purpose of feeding cattle which were soiled, not only without injury, but even with benefit, to the roots, which it was said, would in this way grow larger. Mr. Quincy took twenty-six beds of carrots in the same field and of the same size, with a view of fully testing these statements; and in the month of July, when the lower leaves first began to wither, he caused every other bed to be cut as directed, being careful not to crop the crown or the head of the root—so that there was a cut to an uncut bed alternately through the whole piece. They were gathered, and the roots measured carefully, on the 20th October. The total product of the uncut beds was 104½ bushels: the total product of the cut beds was 58 bushels. Judging by the eye, the size of the roots of the cut bed was nearly two thirds less than that of the uncut bed."

But the question may be considered as put to rest by the experiment of William Clark, Jun., of Northampton, Hampshire county. The experiment was conducted with much care and intelligence; and, omitting several of the details, I shall give only the results:—

Row No. 2, on which the experiment was commenced, was as follows, viz:

46 hills on which the stalks had not been cut, gave - - -	42 lbs. 8 oz.
Dry shelled corn, equal per acre to	bs. 60, 8 lbs.
46 hills from which the stalks had been cut, gave - - -	33 lbs. 7 oz.
Dry shelled corn equal per acre to	bs. 47, 18 lbs.
The loss by cutting the stalks per acre was - - - - -	12 bs. 46 lbs.

The four rows taken together, stand as follows:

No. 1 and 4, on which no stalks were cut, gave an average per acre of 60 bs. 8 lbs.

No. 2 and 3, from which half the stalks were cut gave an average per acre of 54 bs. 25½ lbs.

Loss by cutting half the stalks per acre, - - - - - - 5 bs. 38½ lbs, or cutting all the stalks would make a loss equal per acre to - - 11 bs. 21 lbs.

The difference in the result of the two cases is 1 bs. 25 lbs. per acre; or in the two experiments, if it may be so termed, there is an average loss by cutting the stalks, of 12 bs. 3½ lbs. per acre; a loss quite equal to all the expense of hoeing and harvesting. Mr. Clark adds, "if this experiment is a fair test, it seems that about twenty per cent. or one-fifth part of the crop is destroyed by cutting the stalks in the way they are usually cut." Another exact farmer in Conway has made a similar experiment in reference to this very point. By a careful measurement he states that the difference between cutting the stalks at the customary time or leaving them uncut until after the corn is ripened was eight bushels per acre in favor of the latter practice.

Mr. Clark advances another opinion, which is

quite conformable to my own and to the experience of many other farmers. "This twenty per cent. is not saved at the expense of losing the stalks; they are worth as much, and I think more, all things considered, after the corn is harvested, than they are when gathered in the usual way. If, after being bunched up in a green state, they heat or become mouldy, (a case of frequent occurrence,) they are utterly worthless, except it be for manure; I know of no animal that will eat them. But after they have once been dried by the sun and wind, a subsequent moderate degree of mouldiness, seems to be no injury." This conforms to the opinion of one of the best farmers in Northfield, Franklin county, who is in the habit of gathering his corn and then cutting up the stalk at the ground.

The mode of harvesting Indian corn is of considerable importance. On this subject the opinions of farmers are at variance. Some choose to top the stalks as soon as the corn is glazed, and gather the corn after it has become fully ripened. Others prefer leaving the whole until the grain is sufficiently ripened to be cribbed, then gathering the corn, husking it as it is gathered, and collecting the fodder afterwards. Others choose as soon as the corn is glazed, or is so far advanced that an ear fit for roasting is not to be found in the field, to cut the whole up at the ground and shock it in the field for ripening. This practice, is almost universal in New York, but it prevails only partially in Franklin county, where in general the first described mode of harvesting is adopted. In many places the but-stalks after the corn is gathered, are left in the field to be browsed by cattle, a management which is wasteful, and has nothing to recommend it.

I shall take the liberty in this matter to detail my own experience, while a resident in this county. The leaving the corn untopped until it is sufficiently advanced for gathering, and then cutting it up at bottom, allowing it to finish the ripening in the shock, has sometimes with me been attended with success. In some cases, however, I have had by this management so much mouldy and soft corn as to question its expediency. But as I think I have discovered the causes of my failure, this method now commends itself strongly to my judgment.

The summer of 1832 was so cold, that corn generally was three weeks behind its usual condition; and fears were entertained that the crop would be entirely cut off. On the 9th of September there was a slight, and on the 12th and 13th, there were severe frosts. Corn was generally in the milk; and, in many places, much was killed. The fogs on the river near my residence served as a protection to my crop. Under these threatening appearances, fearing through delay the loss of my whole crop, I determined to cut up the whole at the ground as soon as it should be slightly glazed; and the results and facts in relation to it, I took pains to record.

I was desirous to ascertain whether corn cut in the milk and not at all glazed, would ripen. Three stalks with one ear on each were cut in this condition and placed in as favorable a situation as possible for the access of the sun and air. They ripened perfectly; and to appearance became as fair and hard and heavy as any; but the experiment on a whole field could not be advised, as so favorable a situation for curing a large quantity could seldom be obtained. I began cutting my corn on the 14th September, after having previously cut out the suckers and barren stalks. In the field which I took first, the corn appeared dead; but this was occasioned by the rust, not by the frosts. This corn being cut at the bottom and not suffered to be laid upon the ground, several hills were brought together, the stalks were spread widely at the bottom, and were tied by a single band at the top. Much of this corn upon husking, appeared of a pale yellow, and a good deal of it was soft and mouldy. The shocks did not stand firmly, and many were over-turned by the wind. The centre hill, around which the stalks were gathered, should not have been cut until the time of husking, but should have been left as a support to the shock. Another field where the corn was slightly glazed and the stalks very green, was cut, tied in small bundles above the ears and put in small shocks or stooks. This came out better than the former, but not so well as could be desired. It was cut too early, and was not suffered to remain long enough in the shock.

Two other fields were necessarily left to a later period after the corn had become fully glazed, that is in the main every kernel on an ear was well touched, though the stalks were still green and succulent. It was tied near the top in small bundles; put up in small shocks, and spread at bottom so as to give free access to the air. This corn at husking came out bright and sound, with less refuse than ordinary; and the fodder was succulent and of the best quality.

There is a small matter connected with this subject to which my attention was directed by an excellent farmer in the county. His advice was by no means to shock the corn, thus cut up and gathered, upon grass ground, as is often done on the borders of the field, because the grass is likely to exclude the air from the bottom of the shocks. Upon the whole my own judgment, especially liable as we are to early frosts, is to cut up and shock the corn as above described as soon as it is well glazed; and it is a safe error to do it too early rather than too late. The fodder in such case is always of superior quality.

RELATIVE MERITS OF BERKSHIRES AND WOBURNS—BANTER FROM MR. MAHARD TO DR. MARTIN.

From the Kentucky Farmer.

The reader will find below a letter written by Mr. Mahard upon the relative merits of Woburns and Berkshires. We have admitted it on the ground that it discusses facts interesting to the breeding public in relation to two popular breeds of swine and particularly as it proposes a test of their comparative merits in a way more satisfactory than any hitherto tried. At the same time, however, we regret to perceive that Mr. M. has adopted a style of discussion calculated to provoke a controversy likely to degenerate into personality. Although individually sick and tired of mere paper discussions on the question, which is the best breed of hogs, we do not feel at liberty to decline discussions which may lead to the discovery of

truths useful to the pork raisers of the country. Yet we dare say that, if we were to exercise our right of either returning the communications of gentlemen or of expurgating their personal and offensive expressions, they would get into a higher passion on account of the act than they exhibit in their productions. There is an exceeding degree of sensibility manifested by breeders whenever a discussion of the merits of this or that breed of animals is in hand. As much heat is exhibited, by the advocates of the various breeds, towards each other, as is usually observed between the different political parties. We shall take no side in these controversies. Throwing our pages open alike to all, we have only to say to each, bring forward your strongest facts and give our readers the benefit of them. * * * —*Ed. Ky. Far.*

Cincinnati, 2nd Dec., 1841.

To the Editor of the Kentucky Farmer:—I find on looking over various agricultural papers of the United States, that Dr. S. D. Martin of Kentucky, has published a trial made by himself and James F. Taylor, of feeding a Berkshire sow and two Woburns, for ten days, and as the whole particulars of the case have not been published by the Doctor, I feel anxious that they should be, for the information of all concerned, and as he is such a stickler for *facts*, he of course will have no objections to what I am about to state.

What I learned of this trial of feeding between Doctor Martin and Mr. Taylor, was at the Doctor's own house last September, when I visited him in company with Mr. Affleck, editor of the Farmer and Gardener. Here I met Mr. James F. Taylor, and heard him and Dr. M. discuss the whole subject, and I must confess, after which, I could not but wonder that the Doctor had come out in the public prints and published this trial, as I think it can be made to appear from all the facts in the case, that he has gained nothing by it, only so far as it helps to make a noise about his hogs, and keep them before the public.

It appears on the 13th August last, Mr. Taylor placed a Berkshire sow of his, and Dr. Martin two Woburn sows, in the hands of a Mr. Weathers, a disinterested man, to be fed for ten days, on 5 pounds of corn per day. Mr. Taylor is a nephew of the Doctor, and Mr. Weathers is a tenant. These things I state because they are facts. Well, as to the result, Doctor M. and Mr. T. agreed as to the gain of the Berkshire sow and one of the Woburns, which they said was 21 pounds each on fifty-two pounds of corn in ten days, but upon that of the other Woburn sow, Courtney, on the same allowance and same number of days they disagreed. Doctor, M. asserting that she had gained 30 lbs., while Mr. Taylor contended that she was incorrectly weighed, and that he did not believe that she had made any such gain. I now contend that Doctor M. has published to the world what is not a fact, for it is disputed by his own nephew, Mr. T., that the Woburn sow, Courtney, did gain as much as was represented she did.

The Doctor goes on to state, from this trial made with Mr. Taylor, that it is a fact that the Berkshire hog is a greater consumer than the Woburn. (See his communication particularly to the Tennessee Agriculturist, November No. p. 259.) Now only hear what he told me in a private conversation on this very subject. He said that on the day he brought home his Woburn sows from Mr. Weather's, he told his man Patrick to put up Courtney and give her as much as she would eat for two days, and then they would weigh her again. He did so, and found she eat a bucket of swill! a bucket full of apples! and nineteen ears of corn! and gained 19 lbs., and from these facts, the Doctor concluded that the Berkshires were the greatest consumers! The gain of 19 lbs. in the two days was principally in the weight of food given her, and with which she had gorged herself, and I believe just as much in it, admitting that the Doctor was correct, as I do in an animal gaining 30 lbs. of *flesh* on 51 lbs. of corn. Such a thing is utterly impossible, and if she did weigh 30 lbs. more at the end of the ten days, it was because her stomach was full of water, or something else besides the 51 lbs. corn consumed.

It will now be seen, that the trial between Messrs. Martin and Taylor proves nothing at all to me, regarding the relative merits of the different breeds of swine, and inasmuch as the Doctor has been bragging and bantering the whole world to feed against his Woburns, and as I do not believe that there has ever been a fair test yet made, I propose selecting six of my Berkshire pigs, 3 months old, and I call upon Dr. M. to select the same number of his Woburns, and put them into the hands of a disinterested man together, to be fed from twelve to fifteen months in the usual method of feeding hogs for pork—to pasture them in the summer, and to have all the grain measured that they consume, and then let them be drove to this market or to any other that may be agreed upon, and the hogs weighed alive, then killed and weighed again, and the whole trial be published to the world.

I am now busy in packing pork in Covington, Kentucky, and I wish to mention a *fact* with regard to a lot of 103 head of hogs, 69 of which were *one-half* and *three-quarters* Berkshire, belonging to N. McNeese, of Harrison county, Kentucky, the whole averaged 268 lbs., gross at home, and after being driven 50 miles to this place, and kept on hand for several days, they were slaughtered and weighed 219 lbs. net. The usual loss between gross and net lots, in common hogs, is one fourth and over, this shows a gain of 18 lbs. per head in this lot; and had the Berkshire cross been weighed by themselves, it would have been still greater. I do not think their loss between gross and net weight would have been over 40 lbs. a hog, or less than one-sixth.

So thoroughly am I convinced in my own mind that the Berkshire hog is superior to all others, that I am anxious to have a fair and impartial test made between them and any other breed, and the sooner it is done the better. As far as I have been able to learn from those to whom I have sold Berkshire pigs, none have been disappointed in them. A correspondent of mine writes from Tuscumbia, Alabama, under date of 19th November last, informing me that a lot of Berkshire pigs I had sent him had arrived safely. He said he had an opportunity of seeing one or two pairs of Doctor Martin's thorough-bred Woburns. "There is," says he, "humbuggery in the Doctor, his hogs *wo'n't do what he says they will.*"

"They are a large boned, coarse hog, and not a good shape, and as to their being sustained on less food than any other breed of hogs is out of the question, his experiments to the contrary notwithstanding. To say that a large boned, coarse haired hog, that will not mature short of 3 years, and weighing from 8 to 1200 pounds, can be sustained on the same amount of food that a neat boned, muscular, compact hog, that will mature in from 12 to 20 months, is contrary to nature and philosophy, and any individual instance to the contrary only proves an exception to a "general rule." He further remarks, "that the Doctor states in a letter to a friend of mine, that he has not ascertained at what age his Woburns would mature, as he has never fed any long enough, though he has fatted some over there years old!!"

Those papers that have copied Dr. Martin's trial of the Woburns and the Berkshires will, as an act of justice, please do the same with the above. Most respectfully,

JOHN MAHARD, Jr.

[We have given place to the foregoing article, not because we approve its *manner*, or take sides with the writer, but because we had published the previous article commented on. It is unfortunately the fact that there is a great deal of humbug in every branch of stock-breeding and selling, by which the salesman can derive large profits from exaggeration and deception. Without meaning to detract from the real merits of either the Woburn hogs, of which we know nothing practically, or of the Berkshire hogs, of which we know something, and think favorably, we are well satisfied that there is much more of humbug than of truth in the high-colored recommendations of both, and especially of the latter, because best known to us; and that of the numerous communications published in commendation, much the greater number are merely elaborately constructed and carefully disguised breeders' and salesmen's advertisements and puffs. Of course, this and every one of many such expressions of our opinion, is calculated to injure our interests with the most active and influential writers for and supporters of agricultural periodicals, who are (unfortunately) the producers and sellers of humbugs, in some one or other department of agriculture. And not only do we thus lose the favor and incur the hostility of the whole humbugging class, but fail thereby in pleasing their victims, or agricultural readers in general, who are much better satisfied (at the time) when cheated, than to be warned of and guarded against deception. Even when deriving no *direct* gain or reward from aiding the system, it is greatly to the pecuniary interest of an agricultural editor to act as if guided by the motto, "Humbug for ever!" and to lend his publication entirely to such service, so far as demanded.—ED. F. R.]

From the (Nashville) Agriculturist.

POTATOES, GAPES IN CHICKENS, TETTER, MOSQUITOES.

To Dr. J. Shelby—dear sir—Agreeably to your request, I send you the root part of a corn stalk, raised in the following way. I dug a trench about 20 inches deep. One object was to try an experiment with potatoes, to see if they would thrive well at a considerable distance beneath the surface. I planted my potatoes with a few grains of corn at the bottom, covered with chip manure, mixed with the soil, and after they came up, I filled the trench as fast as I could without smothering them. I at the same time planted two grains of corn on the surface near by, one of which I cultivated by hoeing about it and making a hill, and to the other I made no hill, nor loosened the soil near it. The season was a very dry one, with but little wind when the corn was in blossom. When it was ripe, I found a good well set ear on the stalk, I did not cultivate, further than to scrape away the weeds and grass. None of the others produced as well, which I supposed might be accidental. I hilled up the trench so as to make it about two feet from the bottom. The next spring I dug my potatoes and found a very poor yield, though I found potatoes at all depths. I have since tried the same experiment in potatoes in a good season, and with nearly the same success. I was induced to try the experiment from one I had tried before. I took sprouts from potatoes and planted them in hills in my garden, and cultivated them as usual. In the fall I dug them, and their yield was moderate. I overlooked one hill which came up the next spring, and as they were of the late kind, I knew they would produce but little under the common mode of cultivation, and continued to hill them up to within about six inches of their top until fall. When I dug them up I found about a dozen very large good potatoes, and but one too small for cooking. I suppose it is known that the late kind of Irish potatoes, if planted early in this climate, hardly yield the amount planted. The best time to plant is from 25th of June to 1st August. I suppose it is likewise known that the growth of potatoes can be protracted by hilling them up. Hill up potatoes that are in blossom, and the blossoms will fall off. A new growth commences, and in time they will blossom anew. In this way one can put off the ripening of early planted potatoes till fall.

There is in this climate a difficulty in keeping potatoes from deteriorating in quality. They will keep in some parts of France by burying them $3\frac{1}{3}$ feet beneath the surface. I have tried them here 5 feet, and still they were within atmospheric influence. I once found a small piece of sweet potato, perfectly sound, four feet beneath the surface, in what had been a potato cellar beneath my kitchen, which to my certain knowledge must have been there ten years, and I believe twenty. From thirty years' experience in this county I am convinced that the surest way to raise the largest and best Irish potatoes with the least trouble is to have them so near the surface that the ground will crack as they expand. I am not certain but the same may be true in sweet potatoes. * *

I have seen in the Farmers' Register, as taken from the Cultivator, two communications upon gapes in chickens. Their authors appear not to

understand the cause or best mode of cure, both of which are very simple. One recommends as a preventive, the taking of the chickens early from the hens and "scanting them in their food." A fine way, indeed, for having fat chickens for the table! The French mode of starvation for the cure of disease is founded in philosophy, but a deeper philosophy rejects it altogether.

It has been a long time observed that when a person settles a new place, it will be a year or two after he gets a hen-house before there will be gapes among his chickens. I believe those who have no hen-house or covered place for hens to roost or set in, are never troubled by the gapes. Some have two hen houses, keeping one uncovered alternately through the year, and so avoid the gapes. If you will examine a hen coming off with chickens that will have the gapes, you will find her abounding in lice, which will be communicated to her chickens. Should you take these chickens previously, and keep them from being lousy, they will not have the gapes, and there will be no necessity for "scanting their food." It is possible that chickens already having the gapes may have life protracted and perhaps get well by "scanting their food," on the principle practised with patients, whose vitality is nearly extinct. Lice are continually sucking the blood of their victims. If you will cut open and examine a chicken having the gapes, you will find one or more long worms in its windpipe, obstructing its breathing. These sometimes can be thrown out by taking the chicken with its head from you, raising it up at arms length, and bringing it down very quick.

If you will examine the blood of a gaping chicken, you will find it pale and thin; a sure sign that it lacks iron. Under this belief more than twenty years ago, and after having tried every known remedy to no purpose, I concluded to try iron. I take rusty nails, iron turnings or filings, put them into an unstopped bottle with good vinegar, and set it in the sun, often shaking it till it becomes black. I put a table-spoonful of this into the dough, which I feed, and with it cure or prevent the gapes. I once gave it to a sick hen, that was pale and so weak that she could neither walk nor stand without falling forward or back, and in a few days she was well, and afterwards raised six or more broods of chickens. Was not this disorder the pip?

I published the remedy eight or ten years ago, and was informed that a certain gentleman, once somewhat noted as a lawyer, and since as a preacher, used it and said it killed every creature that ate it. He must have got iron filings mixed with brass, which is common in most mechanics' shops. I have constantly used it, when needful, and have never know any harm from it. I have a hen-house, but my hens roost on the trees near the house, and although I have seldom less than thirty, and often more, and raise chickens, I have not had an instance of gapes for several years. A setting hen or other fowl is said to have fever, because their heat is greater than at any other time; but it is not fever. It lacks every characteristic of fever, but increased heat. * *

Farmers and laboring men, as well as others, often suffer from tetter, a disorder, which is often attempted to be cured, and not always with success. The fee for trying to cure, and I suppose commonly with aquafortis, is said to be sometimes $10. Perhaps a dozen years ago, I often had an itching humor on the backs and sides of my fingers, which was quite troublesome. In two or three weeks numerous small pimples would arise, containing a fluid, which I would let out with a sharp pointed knife. Then they would heal and disappear for some weeks, when they would come on again in the same way. After two or three years the humor appeared to quit the fingers and come into the palms of my hands. They would at first itch, and then in places appear as if scorched, and then the skin would crack. I soon learned it was tetter, for I had known nothing of the disorder. On inquiry I found it was seldom cured, and having no ten dollars to give as a fee, I determined to search for a remedy until I found one. I believed that vegetables contained an antidote for all disorders, and sought a remedy among them. I tried various things for three years or more before I found one. One day, walking in my garden and passing some rue, I recollected having heard that if a person handled rue, when the dew was on, it would blister. I took some leaves and rubbed them in my hand, and instantly the itching ceased. I pounded some and added water to it; and rubbed it on my hands frequently, and in about three weeks the tetter entirely disappeared. But it shortly broke out again, and I cured it again. This convinced me it was a humor pervading the system. After a while it appeared only in the spring and fall, and so continued to do for two or three years, when it ceased altogether for several years, and I supposed I was free from it, until a few weeks ago, when it came on as bad as ever; but I soon cleared it out. You undoubtedly have heard that "rue and rum" was once a catholicon. Of course it can be used internally with safety. Those who wish to expel the tetter virus totally from their systems, can drink rue bitters. I have had no opportunity of trying rue on tetters except on the hands, but suppose it will be equally efficacious, wherever the disorder may be. I have only to caution all who use it externally, not to suffer the sun to shine long upon the parts wet with it, for several days; for sunshine will produce inflammation.

As it sometimes happens that children lose their lives by eating Jimson (stramonium datura) and as I did not know that any specific had been discovered against it, I a few years ago tried a sort of experiment with the view of finding one out. Passing a barrel, which had stood too or three days nearly full of rain water, I saw thousands of little wiggle-tailed animals. (A learned man would have called them embryon or chrysalis mosquitoes.) They darted to the bottom immediately; but soon rose with their mouths to the surface, to enjoy the warm sun and the air. I watched them several days, wishing to see them shuffle off their "mortal coil" into mosquitohood. A full grown one would rise with its back a little above the surface, and after a short time its shell would open at the top and expand into a complete boat. (Perhaps antiquarians trace keel boats to this origin.) Shortly a mosquito would raise itself on its tiny legs, and stand erect. After a little it expanded and dried its wings, and then flew and perched on the side of the barrel. Having sufficiently satisfied my curiosity with *Mosquitology*, gathered a parcel of Jimson weed,

and cutting it up fine spread it thickly on the surface of the water. There were many interstices between the pieces, where shoals of the little merry fellows could enjoy their pleasant sunshine. In two or three days I found none near the surface. They kept at the bottom, where they could not come to maturity. I noticed this until I was satisfied that the poison at the surface prevented their rising. I then sprinkled a pound or more of slacked lime upon the top. A part fell to the bottom, and a part remained at the surface. Shortly my little pets rose to the top "as merry as crickets." A mosquito can hatch out only at the top; for they drown as easily as a fly.

Should any one about me become poisoned with Jamestown weed, I should give lime water as a specific. WILLIAM CHANDLER.

Mill Creek, near Nashville, Dec. 1841.

UNITED STATES AGRICULTURAL SOCIETY.

Constitution of the Society

The style of this society shall be, "*The Agricultural Society of the United States.*" Its objects shall be to improve the condition of American husbandry, and, from its central position to serve as a medium of communication and of action with other agricultural societies throughout the union.

Article 1. This society shall consist of such members as shall, at the formation of the same, sign the constitution, and pay to the treasurer two dollars, and one dollar annually thereafter as long as they shall continue members.

Art. 2. Any citizen of the United States may become a member of this society by paying the fees required for membership.

Art. 3. Any agricultural society in the United States shall become an auxiliary society, upon paying to the treasurer the sum of ten dollars, upon application, and five dollars annually thereafter;' and each auxiliary society shall receive no less than five printed copies, of the annual proceedings of this society, and shall also be represented by such delegate or delegates as it may appoint to the annual meeting of this society, and on all questions to be decided by the society such delegation shall be entitled to ten votes.

Art. 4. Any person paying to the treasurer ten dollars shall receive a diploma of membership for life.

Art. 5. The officers of this society shall consist of one president, one vice president from each state and territory, and one from the district of Columbia, a recording secretary, a corresponding secretary, and treasurer, and a board of control, consisting of five members, three of whom shall constitute a quorum.

Art. 6. The president, and in his absence one of the vice presidents, shall preside at all meetings of the society. By the concurrence of the board of control he may call special meetings of the society, giving public notice thereof, by advertisement, at least three weeks before said meeting. He shall draw all drafts on the treasurer for moneys paid out, which drafts shall be countersigned by the recording secretary; and the treasurer shall, at the next annual meeting, make a full statement of all receipts and expenditures, setting forth as well the items as the amount thereof.

Art. 7. The vice presidents of the states of Virginia, Maryland, Pennsylvania, and Delaware, and of the district of Columbia, shall be ex officio members of the board of control, provided no act shall be done by said board without the presence of a quorum of the original board.

Art. 8. The recording secretary shall keep a full record of all the proceedings of the society, and supervise the publication of them as he may be directed.

Art. 9. The corresponding secretary may be one of the five members constituting the board of control, and in addition to conducting all the correspondence of the society, shall keep a record of all expenditures ordered by said board, and, in short, perform for said board all the purposes of a secretary, and shall receive such compensation therefor, as said board, with the consent of the president, may allow.

Art. 10. The board of control shall consist of five members, living in, or at a convenient disvance from this city, who shall perform all the executive duties necessary to the purposes of the society not especially assigned to other officers. They shall avail themselves of all the means in their power to become acquainted with the agriculture of foreign countries, and through such aid as they may be able to receive from our diplomatic agent abroad, as well as our consuls, shall, if consistent with the pecuniary means of the society, introduce from abroad whatever they may think materially calculated to improve the agriculture of this country, whether it consists of information as to new and improved modes of culture, seeds, plants, additional articles of cultivation, agricultural implements, or domestic animals; the disposition of which shall be made at the first annual meeting of the society.

Art. 11. The board of control shall also use the necessary means of having a large exhibition, at each annual meeting, of improved agricultural implements and machinery, with full and public trials of the same; of improved stocks of all kinds, and particularly of inviting the exhibition of such animals as have taken premiums at other agricultural shows, with a view of testing the superiority of prize animals themselves; also of the different breeds of animals, for the purpose of comparing the advantages of each. They shall affix to such exhibitions such premiums as they shall adjudge suitable, appointing such judges as they may select to award the same, which judges shall not only assign their preferences, but shall draw up a detailed report of their several examinations; setting forth fully a description of the articles or animals adjudged, and the grounds upon which their preferences are awarded.

Art. 12. It shall further be the duty of the board of control, when they think it expedient, to procure a model of such implement and machinery as may have received a premium, to be kept in some suitable and convenient place, selected as an agricultural repertory, for the inspection of the public, and particularly of members of the society.

Art. 13. The said board may also award premiums for prize essays, to be read before the society, for well conducted and well reported experiments in agriculture, having reference in the

same to the pervailing agricultural productions of the different societies of the union.

Art. 14. The said board shall give due notice, by advertisement, of the time and place of such exhibition, the premiums to be awarded, and the committee by whom they are to be awarded; and for the expense attending the discharge of the duties herein imposed, they shall draw requisitions on the president, setting forth, severally, the items of expense, which requisitions shall be recorded by the recording secretary, and the president, if he approves the same, shall thereupon issue his draft on the treasurer for the amount.

Art. 15. The said board shall also be instructed to make efforts to obtain funds for the establishment of an agricultural school in the district of Columbia, and, appurtenant thereto, a course of public lectures on agriculture, chemistry, botany, mineralogy, geology, and entomology, as appropriate sciences to the great *business of agriculture*, and an experimental farm, which, with the buildings and improvements thereon, shall be set apart for ever "*as an establishment for the increase and diffusion of knowledge among men.*"

Art. 16. The board of control shall procure an appropriate seal for the society, to be attached to diplomas or other documents or instruments which may be issued to honorary members or other persons, under the direction of the society. They shall fill all vacancies that may occur by death, resignation or otherwise, either in their own body, or the list of the officers, to continue until the next general meeting.

Art. 17. In further aid of the purpose of this society, the said board shall invite some suitable person to estabtish an agricultural publication in this city, and shall also petition congress for the incorporation of this society.

Art. 18. The first general meeting of this society shall be in the city of Washington, on the first Wednesday in May next, and thereafter at such times as the society may direct.

Art. 19. All moneys paid to the treasurer, either for subscriptions or as donations to the society, shall be deposited to the society's credit in such bank or institutions as the board of control may direct, and can only be withdrawn upon the requisition of the president or acting president, countersigned by the secretary and treasurer.

Art. 20. This constitution shall be amended only by a vote of two thirds of all the members present at an annual meeting of the society; but the board of control may, by the aid of the president, establish any needful by-laws for the better order of the society not incompatible with this constitution—which by-laws may at any time be amended by a majority of the society present.

Art. 21. Elections for all officers of the society shall be held by ballot at every general meeting thereof; but, until an election at the general meeting in May next, the following persons shall be a committee to appoint the officers hereinbefore mentioned, and to make publication of the same, in ten days from this time:

The Hon. Levi Woodbury, of New Hampshire; Hon. Lewis F. Linn, of Missouri; Hon. Wm. C. Rives, of Virginia; Hon. Wm. Cost Johnson, of Maryland; Hon. Dixon H. Lewis, of Alabama; Hon. John Hastings, of Ohio; Hon. H. L. Ellsworth of the District of Columbia; Hon. John S. Skinner, of the District of Columbia; and John F. Callan, Esq. of the District of Columbia, were then appointed a committee to select the officers of the society provided for in the constitution, to serve until the regular election in May next.

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The committee, appointed by the Agricultural Society of the United States to select the officers of the society to serve until the first general meeting and exhibition on the 4th day of May next, have met, and do hereby recommemd and report the following gentlemen to fill the offices annexed to their respective names. The recording secretary is requested to publish the names, and give special information to each individual of his selection.

LEVI WOODBURY.
Chairman for the Committee.

President, James M. Garnett; *Corresponding Secretary*, John S. Skinner; *Recording Secretary*, John F. Callan; *Treasurer*, Edward Dyer.

Board of Control—Levi Woodbury, Elisha Whittlesey, Alexander Hunter, John A. Smith, W. J. Stone.

Vice Presidents—Maine, George Evans; New Hampshire, Isaac Hill; Massachusetts, B. F. French; Connecticut, Eli Ives; Rhode Island, Gov. Fenner; Vermont, Wm. Jarvis; New York, C. H. Bement, New Jersey, C. S. Green; Pennsylvania, George M. Keim; Delaware, J. W. Thompson; Maryland, Thomas Emory; Virginia, Edmund Ruffin; North Carolina, Edmund Deberry; South Carolina, Wade Hampton; Georgia, W. Lumpkin; Alabama, Dixon H. Lewis; Louisiana, Alexander Mouton; Arkansas, Archibald Yell; Tennessee, F. H. Gordon; Mississippi, M. W. Phillips; Kentucky, Chilton Allan; Missouri, Lewis F. Linn; Illinois, A. W. Snyder; Indiana, Solon Robinson; Michigan, Isaac E. Crary; Ohio, John Hastings; District of Columbia, H. L. Ellsworth; Florida, R. W. Williams; Iowa, Timothy Davis; Wisconsin, Henry Dodge.

The vice presidents of Virginia, Maryland, District of Columbia, Pennsylvania, and Delaware are ex-officio members of the board of control.

J. F. CALLAN, *Rec. Sec.*

[Though it is contrary to our usage to publish the constitutions and preparatory proceedings (of merely *intended* operations) of new agricultural societies, we have made an exception to that usage in favor of the "United States Agricultural Society," recently instituted at Washington—an exception due to the magnitude of the plan and object, and also to the public spirit and patriotic views of the individuals who have founded the society. But neither our high respect for the founders, (the principal of whom are also our valued friends,) nor the unexpected and unsought honor which the society awarded to us among their appointments to office, will prevent our again expressing the opinion and the fear that a society so constituted, and so located, cannot possibly *work right*, nor do much good in promoting agricultural improvement, compared to the results that might be produced from the operation of as much talent, zeal, labor and money, di-

rected differently. It cannot be expected that any considerable number of individuals, or enough to maintain the semblance of a "United States Agricultural Society," can be induced to travel to Washington, from all the states of the union. And even if such incredible sacrifices were made, and some members were to attend from Maine, Iowa, Missouri, Louisiana and Florida, as well as from the near neighborhood of Washington, what could be expected from their meeting, more than the usual and almost useless procedure of agricultural societies in general? And if no more should be done, no member would again travel 1000 miles—unless he had other work to do, and private interests to attend to at the seat of government.

It is not that there are not excellent and abundant materials and means at Washington for an agricultural society of more humble pretensions, and yet of far greater utility than this. There are some resident individuals there, whose names appear in the foregoing proceedings, whose general intelligence, zeal for and knowledge of agriculture, would dignify and utilize any properly constituted district society; and such a society would be greatly aided by facilities peculiar to that locality. But these individnals and these means will receive no additional aid by belonging to an organization and plan so ambitious as to be made coextensive with the whole space of our enormous territory.

But whatever may be our anticipations and fears, we shall most heartily rejoice if they shall prove to be unfounded, and the value and results of the "United States Agricultural Society" shall be shown to be equal to the most sanguine expectations of its founders.

VIRGINIA SALT MINE.

From the Journal of Commerce.

I received last week, from my correspondent, Alexander Findley, Esq. of Saltville, Washington county, Virginia, a package containing, among other geological specimens, several pieces of rock salt, or sal gem, which is of a very superior quality. I have left a sample of it at the office of the Journal of Commerce, for the inspection of any person who may wish to examine it. The rock salt is slightly tinged with a reddish color. This is the first salt mine found in the United States east of the Mississippi river and the great lakes, and may well be reckoned a great treasure. The stratum is about one hundred and fifty feet thick and reposes on a bed of plaster rock, and is a little more than two hundred feet below the surface.

The section of Virginia where this salt mine is located lies between the Clinch mountain and the Blue Ridge, and is near the line of East Tennessee, about equal distance from Nashville in Tennessee and Richmond, Virginia. I have also received a sample of most beautiful table salt, manufactured at the salt works at Saltville by evaporation.

I have put up specimens of the rock salt to forward to the state geological cabinet at Albany.

This salt mine was discovered in boring for salt water—and although it is so near the surface, the proprietors find it more profitable to evaporate the brine which yields about two pounds of pure salt to the gallon, in preference to excavating the sal gem. The state of Virginia is rich in her mineral deposites—of iron, coal, salt, plaster and gold—iron, coal, salt and plaster are generally found near together.

E. MERIAM.

From the Kentucky Farmer.

RELATIVE WEIGHT OF GRAIN AND COB OF INDIAN CORN.

Bourbon county, Dec, 13, 1841.

To the Editor of the Kentucky Farmer—In looking over your interesting periodical, I sometimes meet with notices of fine ears of corn produced in our country. Now in order to enable your readers to understand precisely how good they were, it seems to me that your correspondents should, in describing them, give us the exact weight of the corn both on the cob and when shelled, as this would afford a very certain standard. The length or girth of the ear, the number of rows or grains, are too uncertain measures by which to determine the excellence of an ear of Indian corn. A reflection of this kind led me while gathering my corn to make the following experiment:

On the 17th November last, without any very great care, I selected twelve of the most remarkable ears that were convenient to hand. The whole, being quite dry, weighed thirteen pounds good weight on the cob. The longest ear measuring thirteen inches in length, but only $5\frac{7}{8}$ inches in circumference was the lightest of the twelve, and contained 742 grains. The shortest ear measuring $8\frac{1}{2}$ inches and $8\frac{1}{4}$ inches in girth, had 22 rows and about 1100 grains—the greatest number of grains on any of the twelve—but the ear was much lighter than many others of the dozen. The heaviest and best ear of all measured only nine inches in length and $8\frac{1}{8}$ inches in girth, containing 18 rows and about 846 grains, it weighed 1 lb. $3\frac{1}{4}$ oz. unshelled; the corn when shelled weighed $15\frac{1}{2}$ oz. I did not consider this a very remarkable ear for size; but the experiment shows how much the eye may deceive us as to the relative value of an ear of corn. Among the dozen there was one ear, selected by several as being decidedly the finest and best. And certainly its appearance was prepossessing, being 12 inches long and $7\frac{1}{4}$ inches in circumference, containing only 14 rows and about 700 grains, which, however, were very large, wide and full. This ear was the second in weight, mark that, weighing 1 lb. 3 oz.; the corn it shelled weighed $14\frac{1}{4}$ oz. having a much heavier cob than its successful competitor. The description of corn is the white flint; and considering that the past season was not the best for corn, I think mine tolerably good. The above experiment has suggested to my mind an important improvement that I think may be made in corn. I intend to try it, and if I succeed will in due time inform you as to the result. I am, respectfully, yours,

JNO. ALLEN GANO.

BROOM CORN.

From the Fourth Report of the Agriculture of Massachusetts.

Broom corn (*Sorghum saccharatum,*) is the next most important crop grown in the county of Franklin. Its cultivation is chiefly confined to the meadows on the Deerfield and Connecticut rivers, though there have been instances of large crops in the interior. Deerfield, Whately and Sunderland in particular grow large amounts of it; and it is said that the prosperity of the last-named town is mainly attributable to this product.

The average yield under good cultivation is from six hundred to eight hundred pounds of brush or broom. One thousand pounds are not unfrequently reached. Six to eight hundred pounds are reported as the average yield in Sunderland and Whately. A crop of seed is obtained about once in four years, and forty bushels of seed are considered a good yield. A respectable farmer in the county informs me that in one instance, he obtained one hundred and fifty bushels of seed to the acre. It is planted in hills at a distance of eighteen inches between the hills lengthwise; and in rows about two and a half feet apart, or at a distance wide enough to pass the plough or the cultivator. By some farmers, broom corn is planted in hills two and a half feet distant each way, and fifteen stalks are left in a hill. It requires good manuring; and is sometimes manured as Indian corn in the hill, or the manure is spread. The cultivation is more expensive than that of Indian corn. No crop is more beautiful than the standing corn, when in perfection; and it frequently reaches a height of twelve to fifteen feet.

The stalks of the plant are long and hard, and therefore difficult to load on a cart. They are generally considered as of no value excepting for manure. This, however, is an error. The Shakers at Canterbury, N. H., among the very best farmers in the country, are as careful to save their broom corn stalks, as their Indian corn stalks for fodder; and, for the feeding of their young stock, deem them equally valuable.

The usual mode of gathering is to table the corn, that is, to cut off the top, or tassel the broom as it is called, about two or three feet from the top, and bending the stalks of two rows together, lay it down and leave it until it is seasoned and fit to be gathered. The brush is then cut, tied in small bundles and carried in. The remainder of the stalks are burnt in the field the ensuing spring, and some little advantage is supposed to be derived from the ashes. Some farmers prefer, after gathering the brush, to cut the stalks and lay them lengthwise in the rows, and plough them immediately under. They will be entirely decomposed by the ensuing spring. A still better mode is to carry them into the cattle and sheep-yards, where they become incorporated with the manure and make a valuable addition to the compost heap. I am satisfied from the experiment of the Shakers, that if properly cured, they might be well applied to the feeding of young stock. It is deemed necessary by the raisers of broom corn to connect with it the feeding and fattening of cattle, that the necessary manure may be procured for the cultivation of this crop.

It is considered a profitable crop when the brush will command five cents per pound. The price has been subject to great fluctuations. Formerly, it was common for each farmer to make his brush into brooms, and sell them when and where he could. This was bad for all parties. It brought too many competitors into the market, and often unduly depressed the price. The buyers likewise were often obliged to put up with an inferior article. The growing of the brush and the manufacture of the brooms are now in different hands. The farmer, as soon as his broom is ready for the market, finds in the manufacturer a purchaser at a steady price; and the manufacturer knows that his reputation, and consequently his success likewise, is concerned in the quality of the article, which he furnishes.

The Shakers for a long time almost monopolized the raising of the corn and the manufacture of brooms, which, like other manufactures of this industrious community, were always of a superior quality and generally commanded a high price, usually 37½ cents a-piece or more. Now, corn brooms are frequently sold from 8 to 25 cents; but many of them are, like Pindar's razors, "made to sell." The handles in an unfinished state, made either of maple or ash, are furnished for a cent a-piece. The wiring and tying on are usually done by the hundred. The scraping the seed from the brush is an unpleasant business, and the dust is prejudicial to the eyes. A common flax comb is generally employed; but an improved machine, moved by horse power is coming into use, performs the work quickly, and greatly lessens the labor. The manufacture, when carried on extensively and with ample capital, has yielded encouraging profits.

The seed is sold at two-thirds the price of oats, and is ordinarily of the same weight. It sometimes weighs more than oats, and by some persons is more highly valued. It is by many esteemed good food for the fattening of swine, when mixed with other grain. Some have used it for fattening cattle and horses, but it is not approved. The saving of the seed of broom corn is, by the best farmers, deemed a matter of much importance. It must be taken from that which produces a full and square head; and not from that which runs up in a spindling form, and "branches like a pine-tree." The difference in the seed is deemed of so much consequence, that while ordinary seed for planting can be obtained at one dollar and fifty cents per bushel, the best always commands four dollars. In no single thing do farmers commit a greater error than in respect to seed. Inferior seed of any kind of plant should never be used; and the difference in the expense between good and poor seed is nothing compared with the increased value of the crop from good seed.

It is a fact, which certainly deserves mention, that broom corn is taken three, four, and sometimes ten years in succession from the same field without diminution of the crop. I have the testimony of three respectable farmers to this point. Yet this can only be done by high manuring. By many farmers it is deemed an exhausting crop. The brooms made from the brush, cut and dried while green, are tougher and much more durable than those made from the brush, when suffered to become quite dry and yellow. The returns of a crop of broom corn in Gill are as follows: the land cultivated was one acre seven rods. The crop of brush was nine hundred and thirteen pounds. Of

seed, there were one hundred and thirteen bushels; eighty bushels of which, sold for twenty-five cents per bushel. This was at the rate of eight hundred and seventy-five pounds of brush to the acre.

I subjoin, also, the exact account of a crop cultivated by Alvah Hawkes, in Deerfield meadows, with which he was kind enough to favor me.

Expense of cultivating one acre of broom corn.

One ploughing the 12th of May, - -	$1 25
Holeing out, one third of a day's work, -	34
Ten loads of manure at 75 cents per load,	7 50
Putting manure in the hills, - - -	2 00
Planting, one day's work, $1; seed, 4 quarts at 75 cents per bushel, - -	1 10
Hoeing first time, 3½ days, $3 50; hoeing, second time, 3 days, $3, - - -	6 50
Hoeing, third time, $2 50; horse and boy to plough for the season, $1 - - -	3 50
Tabling and cutting, 4 days, - - -	4 00
Gathering, carting, and packing away, -	2 50
	$28 69

The expense of cultivating one acre is as above $28,69, the labor being rated at $1 00 per day, which is more than the actual cost. The yield was at the rate of 991 lbs. to the acre. If the ground had been fully stocked, the crop would have been more than 1000 lbs per acre. The brush was sold at 8½ cents per lb. The crop of seed was light and poor; at the rate of 50 bushels to 3 acres; and was sold at 16⅔ cents per bushel or $2 77 per acre.

To the above expenses of $28 69 are to be added as follows:

Scraping 1000 lbs. $3 30; board of man 5 days $1 07, - - - - - -	$4 37
Rent of land, 1 acre, - - - - -	16 00
	$49 06
The sales of the above brush 1000 lbs. at 8½ cts. pr. lb. - - - - -	85 00
Seed upon above acre, - - - -	2 77
	$87 77
Net profit per acre, - - - -	$38 71

This product may be deemed unusual; but there is no difficulty under suitable cultivation in obtaining it. The price is not extraordinary; and had the brush in this case been kept until the spring, it would have brought 12½ cents per lb.

Another estimate by a good farmer, is as follows:

Ploughing, $4 00; dragging, $1 00; manure, $12 00; seed, 25 cents, - -	17 25
Planting 2 feet by 3½ feet apart, 75, -	75
First hoeing, $4 68; 2d hoeing, $2 34; 3d hoeing, $1 17, - - - -	8 19
Gathering brush and scraping seed off,	12 00
	$38 00
Returns.	
700 lbs. of brush at 8 cents, - -	56 00
40 bushels seed at 25 cents, - -	10 00
	$66 00
Net profit per acre,	$27 81

No charge is here made for the rent of the land.

MANURES. STABLE, COW AND HOG YARDS. HUMAN EXCREMENT.

From the same.

The price of manures in this county is very high. The farmers in the vicinity of Boston depend upon the city stables for a large portion of what they use. The price in Boston varies from three to four dollars a cord. I have known a market farmer to purchase one thousand dollars' worth in a year. Since the value of liquid manure is established, and its intrinsic efficacy is so much superior to the solid parts of manure, it is strange that no provision is made by the farmers for saving the vast quantities that are now lost in the city. Hardly an instance can be found, there is not one within my knowledge, of any provision for saving it at their own barns. This is an improvement yet to be effected. I have urged this matter so strongly, though not beyond its importance, in my former reports, that I shall add little more.

I have known $6 50 paid per cord for stable manure taken at the stable; and a farmer, whose soundness of judgment in other matters I have always respected, expressed his willingness to purchase all the manure from the cow-stable in Lowell at five dollars per cord, though he must then cart it four or five miles in order to reach his farm. These prices are enormous, and the more surprising, since almost every farmer in Middlesex has at hand the means of preparing a compost-dressing for his land of equal value, at not half the cost.

Upon the farms in the vicinity very great quantities are carried from the livery-stables in the city. The hog establishment at West Cambridge supplies a large amount of manure to the farmers in its neighborhood. I do not refer in this case exclusively to the excrementitious matter of the swine, but also to the refuse garbage from the stables, of which I have spoken. This is spread upon their grass lands, or ploughed in on their cultivated grounds, or spread round their apple trees; and in every case with great advantage. If not used immediately, it is placed in a compost heap, and covered with mould, to be used when needed. It has been found particularly useful when applied to fruit-trees at the roots. It is of course full of animal matter, and must furnish in abundance the principles of vegetable life. The intelligent farmer who gives me this account speaks of the effects of this manure as immediate and powerful. To night-soil he objects that its influence is transient. He gives the preference over all others to stable and horse manure. He raises largely of early vegetables and small fruits for the market. The stable manure is more convenient for his forcing beds in the spring, and, after it has performed its part there, is easily applied to other crops.

Large amounts of night-soil are obtained in Boston and Charlestown, and applied by the market-gardeners. It is brought out in a crude state in covered and tight wagons, and too often, without regard either to decency or comfort, is carelessly deposited by the road-side near the dwelling-house in a kind of basin, where a quantity of mould is at hand to mix with it, to absorb the liquid parts, and to put the whole into a condition to apply to the soil. The slovenliness with

which these matters are sometimes managed deserves no light censure. I knew a case in which, in the opinion of his physicians, the life of a respectable individual was a sacrifice to one of these negligently managed deposites made by a neighbor in his immediate vicinity. I do not know why, in a civilized community, the public have not an equal right to claim that the air shall not be needlessly corrupted, any more than the wells in a neighborhood poisoned, whether it be by the effluvia of some odious manure-heap or the scarcely less disgusting odors of tobacco. These places of deposite, as matter of public decency, ought never, under any pretence, to be permitted by the highway. By careful management of them in some suitable place on the farm, remote from the road and the dwelling, this great nuisance might be abated.

I am aware upon what a homely subject I have fallen; but I know how essentially it concerns the farmer's interest and the public health. "Evil be to him who evil thinks." I would advise a fastidious reader to pass over this whole chapter, but that I fear if I did, as it happens with forbidden passages in the classics in college, he would think that he owed it to himself to determine on the propriety of such advice, by first reading with increased attention what the chapter contained.

Every advance in cleanliness is an advance in civilization, a contribution to health and an equal help to good morals. The unfortunate beings who live in cities, are doomed to inhale and exhale the innumerable odors, which are there commingled from cellars occasionally filled with bilge-water, muddocks, which the receding tide has left bare, common sewers, and broken gas-pipes. In the country there is no apology for allowing any thing offensive on the premises. The farmers who obtain the night-soil from cities, would find an advantage in digging a long and deep vault, at least four feet in depth, walled up with stone and plastered and floored so as to be made thoroughly tight, and having a close and moveable covering. Into this the contents of the carts should be carefully turned, with such a constant supply of soil or muck or ashes or effete lime or gypsum as would completely absorb the liquid parts, and might be so intimately incorporated with the solid parts as to bring all into a feasible state of application to the land. This vault or stercorary should likewise serve as a place of deposite for all dead animals in the place, and all other offensive matters, which might be converted into manure. The contents of the family vault, being freely mixed with mould or spent tan, should likewise be conveyed there at least once a week. This would be a great gain to comfort and health. I saw much an arrangement on one farm, and its advantages were most obvious. It formed an excellent bank of general deposite, whose discounts in the spring were always most liberal and useful.

The preparation of night-soil for easy use and transportation, has been the subject of various chemical experiments. The prepared article goes under the name of poudrette; and though there have been occasional disappointments, I have seen it used with great success. The admixture of effete or slacked lime with it has the same effect as any other absorbent; but the application of quick lime, while it destroys its offensive odors, expels its ammonia and proportionately reduces its value. Liebig recommends its mixture with gypsum or chloride of calcium, or some mineral acid. I have not known this tried. This would fix the ammonia and give it out to the plants as the vital process is prepared to take it up. The mode of preparing it in Paris, is by drying it in large vats in the sun until it can be reduced to a fine powder and loses all smell. Its best properties are then gone. Fine peat, muck, fine mould, powdered charcoal, tanners' bark burnt and charred, are substances which may be mixed with it to great advantage. It is beyond all question one of the most powerful of manures, but can only be applied advantageously in a prepared state. An establishment for this purpose is about being made in the county which may prove eminently beneficial..

Bone manure has been tried to some extent; in some cases within my knowledge, with great and decided success; in others, without perceptible benefit. These diverse results convince us of our ignorance, and show how much we have to hope from the investigations of chemistry and philosophical experiments in relation both to manures and soils, and the hitherto scarcely approached mysteries of vegetable life. Much of the bone manure which has been used has been from bones which have passed first through the hands of the soap-boiler, and after all the gelatinous parts have been extracted. A considerable portion of their fertilizing properties has thus been taken away. The most successful application of bone manure which I have known was where they were mixed at the rate of about one part to eight with leached ashes or mould, and a fermentation brought on before they were applied. They were then spread lightly in the furrow, where carrots were sown. The effects were most favorable, and surpassed a free dressing of barn manure in the neighboring part of the field to the same kind of crop. I have known this manure applied likewise with great advantage to corn in the hill, a small amount in each hill without other manure, and to turnips in the drill. Peat mud is used with much success by many persons. Its application, when spread directly from the bog upon the soil, has not been approved; but when it has been thoroughly decomposed and reduced by a mixture with stable manure, with ashes, or with quick lime, it has furnished a valuable manure for spreading upon grass ground or putting in the hill with corn.

Various other manures have been used with great success. Ashes are every where commended as excellent for corn and wheat, and likewise for grass. Ashes being the direct result of vegetable combustion, contain of course that which is essential to vegetable growth and life, and being constantly carried from the earth by the removal of its vegetable products, must in some form be returned to it.

In some cases the waste from the cotton mills has been used with much advantage. This consists of that which is thrown out when the cotton passes through the picker, and is made up not only of the wool itself but a considerable amount of the seeds, which are known to abound in oil, and at the south are much valued as a manure. This manure is sometimes spread thinly on grass land, and at other times put into the compost heap. It has been too little employed for us to

determine the best mode of its application. The waste from the woollen mills has likewise been used as a top-dressing for grass both in Tewksbury in this county, and at Northampton in Hampshire. I have seen its effects in these places and in some other parts of the country. They have been most remarkable, and surpassed by no manure which I have ever seen applied. This refuse used formerly to be accumulated in the neighborhood of the woollen factories at Lowell; and being surcharged with oil used in cleansing it, there was great risk always of spontaneous combustion. When thrown into the river it was complained of as interfering with the shad fishery. The amount of wool used at the Middlesex mills in Lowell is more than 600,000 lbs. per year. Being full of animal matter it is a most excellent manure. Its value has long been appreciated in England, but we seem to have come late to the knowledge of it. I have seen it spread directly upon grass land, both in mowing and pasture grounds, with surprising effect. It is much to be desired that the water in which their wools are washed, full as it is of animal oils and alkalies, could likewise be saved and applied to the land. It would prove beyond doubt a most valuable manure either applied on the grass lands or mixed in the compost heap. In the economy of nature nothing is without its use; and the first duty of the farmer is to remember that nothing should be lost.

A very exact and intelligent farmer in Groton made some comparative experiments with different manures on pieces of land contiguous to each other, of which he has favored me with an account. The land to which these different substances were applied was what is there termed reclaimed meadow, and rich in vegetable mould.

One bushel of ashes applied to three square rods of land at the rate of 53 bushels per acre; this produced a heavy burthen of grass, and was considered the best of the several manures applied.

Salt, applied at the rate of one peck to three rods, or fourteen bushels per acre, produced a fair crop, and was considered the next best to the ashes.

Gypsum, sown at the rate of three bushels to the acre, manifestly much improved the crop, and was much the least expensive application. Lime was dry slacked and applied at the rate of one bushel to six rods, or 26 bushels per acre, without any perceivable effect.

I do not present these examples as furnishing any decisive results, but rather with the hope of inducing farmers to make and record exact experiments, though on a very limited scale, that by the accumulation of such facts we may arrive at something more definite. Little can be deduced from the above experiments, unless equal quantities of each kind of manure had been used; and then we want likewise to understand the nature of the soil, as in respect to some soils it is obvious certain kinds of manure are much more suitable than others.

COMPOST MANURE, PRINCIPALLY OF PEAT OR SWAMP MUD (OR MUCK.)

From the same.

D. S. Haggerston, the intelligent and experienced manager of J. P. Cushing's garden and farm at Watertown, has been kind enough to favor me, at my request, with some practical observations and experiments on the subject of manures, which deserve attention, and are therefore subjoined.

"I send you an account of experiments made on the farm of J. P. Cushing, Esq., of the different composts used as manures, and the apparent effects of each.

"Meadow muck or peat has been used in various ways, and found so very beneficial, that two thirds of the manure used on the farm is dug from the swamp.

"A compost for top-dressing mowing land is made from leached barilla ashes from the soap-boilers', and meadow muck, in the following manner. The muck is dug from the swamp, the last part of August, or early in September, and lies one year on the surface, after it is thrown out of the pit. It is then carted to a convenient place to make the compost heaps, which are formed by spreading a layer of muck ten feet wide, eight inches thick, and of any length desired; on the muck four inches of ashes are spread, then another layer of muck, and so on for five layers of each, which makes a pile five feet high, in the form of a ridge. This is to lie through the following winter. As soon as the frost is gone in the spring, the pile is turned over, well broken, and mixed together. It then lies till the October or November following, when it is spread on the land at the rate of fifteen cart-loads to the acre.

"Two accurate trials of the above compost, in comparison with decomposed stable manure, resulted as follows; 4 squares of equal size which are kept as lawns and mown seven or eight times in a season were manured, two with the leached barilla and muck compost, and two with a compost of well-rotted stable manure. It was spread at the rate of twenty cart-loads to the acre. The grass on the different squares was much the same in quantity, but on the squares manured with the muck compost, it was decidedly of a darker and richer color, and the manure introduced a greater quantity of white Dutch clover or honeysuckle. The second trial was in a field mown for hay, 2¼ acres. The field was divided into two equal parts, as near alike as possible, one half manured with muck compost, the other half with rotted manure, at the rate of fifteen cart-loads to the acre. Eight tons and eighty lbs. of hay were cut from the field. No difference could be discovered in the parts manured by the different composts. This proved that, for a top-dressing, the compost of leached barilla and muck is equal to stable manure. After using it to a large extent for several years, I am still in favor of it as a top-dressing. The compost manure, which we use for ploughed land, is made up of two thirds muck, and one third manure. The muck in all cases is mixed with the manure before it ferments, and care is taken not to put in so much muck as to prevent the compost's heating. The fermentation of the manure decomposes the muck rapidly and I am

convinced the greatest art in the use of muck, as a manure, is to have it in a proper state before it is put upon the land. To dig it from the swamp and apply it before it undergoes a chemical change is undoubtedly injurious. This change is brought on rapidly by hot horse manure or unslacked lime, but with colder substances it requires longer. For mixing with cow manure, or putting in hog sties, it ought to be dug from the swamp, at least six months, and it is better that it should be exposed to a winter's frost, before it is used. The air then, in some measure, effects the change. The action of the manure soon decomposes the fibre in the muck. It falls to pieces like lime, and then has an earthy appearance. In this state, a mixture of one third manure and two thirds muck has never failed with me to produce better crops of all kinds of vegetables than clear manure. For the last five years we have thought it wasteful to use manure without being mixed. Before coming to this strong conclusion of the benefit of muck, when used as a manure, many experiments were made, and universally resulted in favor of muck."

SALTPETRE AS MANURE.

From the same.

Saltpetre has been used to some extent in Middlesex county. The use of this manure and the nitrate of soda, abroad, has, according to the reports which we have had, been productive of so much benefit, that every fact connected with their application here is important. I shall subjoin some few of the results which have come within my knowledge.

E. Phinney of Lexington thus writes to me:

"My experiments with saltpetre as a manure have satisfied me of the inexpediency of using it for that purpose. In the spring of 1839, I purchased 400 lbs., for which I paid $8 per cwt. I tried it upon wheat, rye, and grass. Fifty pounds to the acre on wheat and rye had no perceptible effect, and on grass but very little. One hundred pounds to the acre occasioned a very considerable increase of straw and grain, both in wheat and rye as well as grass. But had I bestowed an equal outlay in compost made from peat-mud and stable manure, or peat-mud and ashes, I have no doubt the immediate crop would have been more benefited and the land have received more permanent improvement. I have in one instance seen very striking effects produced by the use of saltpetre upon a light, sandy soil. But the quantity used I could not learn, any further than that it was much greater than the quantity to the acre used by me. I believe a portion of saltpetre and common salt, say ten pounds of the former and twenty pounds of the latter to a cord of compost manure well mixed, would greatly improve it. The beneficial effects of saltpetre in the destruction of insects that annoy our crops, cannot be doubted. I noticed on the farm of Mr. Whipple, of Lowell, two orchards separated only by a stone wall. The trees upon one side of the wall were badly eaten and almost destroyed by canker-worms, while those upon the other side were untouched. On inquiring the cause, I learned that saltpetre had been used upon the land of the latter orchard and none upon the former. The remedy may be an expensive one; but were my trees attacked by this terrible scourge, I should immediately apply it. The saltpetre, instead of injuring the trees, as most applications do which are made for this object, would greatly promote their growth."

I think proper to subjoin here, though from another county, the experiment of John E. Howard, of West Bridgewater, Plymouth county, an account of which he was kind enough at my request to furnish me. Mr. Howard's exactness and intelligence are well known.

"You expressed a wish to hear further concerning the experiment which I made the past season, to test the efficacy of saltpetre, when applied as a top-dressing to grass land.

"Of the patch selected the soil is a light sandy loam. On this, some time in the latter part of May last, I sowed saltpetre at the rate of one pound to the square rod. The effects were soon visible; the grass exhibiting a deeper shade and a more luxuriant growth than in any other part of the lot. It continued to grow thriftily until the period of its maturity, when, on cutting it, the produce was judged to be double that grown on any equal number of feet in the same field. The beneficial action of this substance, however, seems not to have extended beyond the first crop; as, since that was removed, no appearance of superior fertility has marked the spot where it was spread."

O. M. Whipple, of Lowell, the proprietor of a large establishment for the manufacture of gunpowder, in which much of this material is used, has favored me with successive communications on this subject, which I can do no better than present in his own language.

"It is now about sixteen years since I commenced using saltpetre. The grounds upon which I have used it, have yielded large crops, and have held out much longer than grounds in general, of the same quality of soil, and of the same kind and quality of dressing commonly used.

The kind of saltpetre which I have used has been that part extracted from the common saltpetre while undergoing the process of purification, and is not fit for gunpowder. I have, therefore, not been particular as to quantity, using what I have had to spare; but I am satisfied that it requires but a very small quantity to produce favorable results; I have thought that one hundred and fifty pounds per acre would be a sufficient quantity to be used generally. The best mode of using it is to mix it with barn manure, meadow mud or any kind of compost which may be at hand; although I have used it in various other ways, as I shall now describe.

I have one piece of ground of 2¾ acres. It had been used for a long time as mowing ground, and had, as it is termed, run out, and grew but a very small crop of grass, say 1500 lbs. to the acre, I ploughed it in the fall of 1830; in the spring of 1831, I covered it with barn manure, mixed with saltpetre, as described above, and harrowed it in, and planted corn without disturbing the furrows. I had a very handsome crop of corn. In the spring of 1832 I again dressed it as before, that is, with barn manure and saltpetre, sowed oats and stocked it down. The oats were

good. In 1833, I took from it a crop of grass, which was estimated to be six tons. It has grown grass every year since, and I believe not a less quantity than the estimate above has been taken from it since the first crop. I should be safe in saying that there were six tons grown upon the lot the last year, and this year the crop is good. I have another lot, containing 1¾ acres, which like the other yielded little grass ; 20 cwt. being all the lot produced in 1822. In the spring of 1824, I dressed it upon the surface with manure, meadow mud, and saltpetre mixed; and it yielded a moderate crop that year. In the spring of 1825, I sowed upon the surface, as you would sow rye, a quantity of saltpetre. The result was, that I took from the lot at least four tons of hay, as it was adjudged. This too was in a lot containing apple-trees, and the grass much lodged all over the field. I continued sowing upon this lot a small quantity of saltpetre once in two years, for five or six years, and at the same time raising a very large crop of grass yearly. Nothing has been done to this lot for the last six years, and there is at this time upon it more than a middling crop of grass.

"I have another lot of light-soiled ground, of about four acres; it had been used for growing rye. It occurred to me that I would try the experiment of saltpetre upon a small piece of this ground. The result was so favorable, that the next year, in the spring, I covered the piece with meadow mud mixed with saltpetre. The result was, that I obtained from the ground as large a crop of grass as it was considered profitable to raise. Last year, which was the fifth, it yielded two tons per acre. There has been, however, a small quantity of saltpetre sowed upon the lot since. I could describe other lots upon which saltpetre has been used, but with the same results as those already mentioned.

"I shall now designate the above lots and describe the kind of soil.

"The first is No. 1, of a middling quality, neither very wet nor dry.

"The second, No. 2, is an orchard adjoining Concord river, of a damp soil and of a very good quality.

"The third is No. 3, a dry, sandy soil, considered by me of no value, until I practised using saltpetre upon it as a dressing. With regard to the mode or manner of using saltpetre upon ground, I do not think it makes much difference, if it is but put upon the ground. I have practised sowing it upon the surface, and mixing and ploughing it in with, for aught I know, equal results ; but I should be rather in favor of mixing and ploughing it in. In this case it would require a larger quantity, say 300 lbs. per acre ; the effects would be more slow and lasting. In sowing upon the surface, it would require a less quantity, say 150 lbs. ; but it would be necessary to repeat the dressing yearly, until the crop should be satisfactorily large. I am more in favor of bringing up the ground gradually, by the yearly application of a small quantity of saltpetre, than I should be by a larger quantity, and getting a large crop the first year."

Since the foregoing, the same farmer has furnished me with some additional information, which follows; and again, the present year, assures me of his continued success in this application. I could have wished that the experiments had been made with more exactness.

"Since my communication to you in June last, respecting the use of saltpetre as a manure, I have had a more particular practical demonstration of its utility.

"Having an island in Boston harbor, called Spectacle island, and its distance from land rendering it very expensive to furnish manure for it, in the spring of 1838 I concluded to try the experiment of using saltpetre as a substitute, and in order to test its ability with some exactness, out of two acres which had been cultivated the year before, half an acre was set apart for the purpose of receiving 150 lbs. saltpetre, which were sowed on the surface and the whole two acres were then ploughed and planted with potatoes. At harvesting, I found that there was an increased crop upon the ground where the saltpetre had been applied. I directed the man in charge to dry 5 hills upon the ground where the saltpetre had been applied, and also 5 hills where there had been no saltpetre, and weigh each parcel. The potatoes on the ground where the saltpetre was applied, weighed 9 lbs., the other 4 lbs. This, it will be perceived, was the result of one year's application only. I am inclined to think that its influence will be felt more or less the second, or even the third and fourth years.

A field containing two acres from which grass had been taken for 8 years, I had ploughed in the spring of 1838, once only ; it was ploughed deep, and 90 rods were appropriated to the growth of ruta-baga. The seed was sown upon the tops of the furrows, without any manure in the drill, and the result was, that I obtained 500 bushels of the article specified above; the remainder of the field was sown to oats, but the crop was mostly destroyed by the unexampled growth of hog weed. This field had been wholly sustained by the application of saltpetre upon its surface, previously to its being ploughed, excepting at the time of ploughing, when there was turned in a small coat of manure."

WHITE HOGS.

From the Farmers' Cabinet.

Mr. Editor—It is really amusing to find that many of our friends are beginning already to *turn up their noses* at the black Albany Berkshires, and express a strong preference for Mr. A. B. Allen's white *Kenilworths*, wondering if that gentleman will have a sufficient supply for all his customers the next season? And I have heard some apologizing for having gone into the black Albany breed, by declaring they *never liked them*, always having had a strong prejudice for a white hog—and so we go on. But I suspect the *Kenilworth* harvest will not be so profitable as has been the Berkshires, for nothing will be more easy than to compete with the Kenilworths by means of our own Chester and Delaware county white breeds; and I am sanguine in the belief that we shall be able to convince all disinterested persons, that so far as that distinct breed is concerned, our intelligent friend Allen might just as well have remained at home; and of this he might convince himself, by taking a journey to these parts, at a com-

paratively trifling sacrifice of time and money. And I take the opportunity of introducing to the notice of those who, having tried the Albany Berkshires, and found them wanting, a breed of hogs now in the hands of Mr. William Reybold, Delaware state, which, or I am much mistaken, will not be found at all inferior to the imported Kenilworths, if they be not much superior, as I strongly suspect they will prove. They are perfectly white, too, and soft-haired, with the deep side of the old tawny Berkshire, cutting up nearly as thick in the side and belly as on the back, which is, I guess, about as much of an *antipode* to the black Albany, as the color of the breed. Mr. W. Reybold is the son of Major Philip Reybold, the breeder and feeder of those superlative Leicester sheep which were slaughtered at Baltimore the last season, several of which weighed over 40 lbs. a quarter, dead weight, at the age of two years; and Mr. Allen would find that the major's present stock of fat wethers would vie with any of the thoroughbred varieties in England, of any name or county. And I cannot but suspect, from the perusal of Mr. Allen's letter, that the time *has come* when we may take our stand and breed from our own stock, without being beholden for any more help from abroad; for indeed it is curious to observe how very small have been the importations by this first of breeders and judges of stock, which, as far as I can learn from his letter, amount to *five* pigs of the Kenilworth breed, "three of them from a smaller and coarser boar, and from sows still less!" But what our friend means by stating that "he was informed this was always the case with this breed," I am at a loss to conjecture. It might disclose my ignorance, perhaps, were I to ask, if this admission be meant as a recommendation or otherwise, of this particular breed? To these are to be added the number of Berkshires brought, which is not stated in his letter; the sheep for Mr. Rotch, Mr. Stevenson, and Bishop Mead; one dog, of a sort which requires *no instruction* to break into the management and care of a flock—which no one will believe who knows any thing about the matter—a few Dorking fowls, with extra toes to their heels, sometimes attaining to the *great* weight, when fatted, of 8 pounds—and a few pheasants! Of short-horns he brought none, and confesses that it pains him to see so many Durhams of ordinary quality imported; and as for horses, "England ought to come to us!" What, for carriage horses, the present racing blood, and the high-bred hunters? Try again, friend Allen.

On the subject of the Dorking fowls, I would just say, if Mr. Allen had come on to Jersey state, he would have found that Mr. Wood, of Haddonfield house, could "beat that hollow," not sometimes, but always, many of his chickens weighing more by a couple of pounds than the great weight he mentions. He is in error in the statement that the game cock of England is from a cross with the pheasant; if he had seen any of that particular cross, he would have known better. If I could say what I wish on the subject of the travels of our eastern friends, without fear of offence, I would just hint the probability of their being more gratified, and of reaping more wisdom as well as profit, by going abroad in their own country, rather than by visiting foreign lands in the expectation of speculating in stock, a very precarious business at best. Mr. Allen complains of the enormous expense of shipping animals from England. I fear if his expenses of travel were to be spread over the few animals which he has brought over, the account would deter many from making the experiment in future. I wish that we could for once come down to the improvement of our breeds of cattle without the vile spirit of speculating for money; but that has been our easily-besetting sin, from the time of the Merino-mania to that of the multicaulis and the black Albany Berkshire fever. "All wrong, depend upon it."

I have heard that when John Lossing found that A. B. Allen had gone to England to import big Berkshires, he had the precaution to sell out his Albany Berkshires, making a profitable speculation of it. That was wise; for he may now either go back to the breed by which he has made thousands of dollars, or *forward*, into the Kenilworth; and as he knows so well how to "strike the iron while 'tis hot," he may make capital stock by commencing with such hogs as those described by Homer Eachus, at p. 329 of the Cabinet, vol. v., which might be denominated the improved-improved Kenilworth white Berkshires; he will not be at a loss for individual names, for there may as well be $300 *white* Maximas, as black ones; but he had best be quick about it, for in this part of the country, where that breed has long been known and properly appreciated, persons may be found who will "hit the right nail upon the head," and go into the business at once. G. H. D.

Chester county.

BUTTER.

From the Halifax Colonial Farmer.

The Low Dutch inhabitants of Long Island were accustomed to churn their milk instead of the cream, as habit had taught them to prefer buttermilk to sweet skimmed milk. They consequently churned every day; the morning and evening's milk was put into a very large and very clean churn which was placed near the fire, and securely covered, always putting to it a small quantity of coagulated milk. As soon as the milk was all coagulated, which it generally was by nine o'clock the next morning, it was carried to the milk-room and emptied into the churning churn, adding one third the quantity of warm water. The woman churned with her foot, as she was accustomed to turn her flax-wheel, the dasher being lifted by a spring-pole, such as is affixed to the most simple kind of turning lathe. While churning, she was always knitting, for a Dutch woman will never lose any of her time. The churning was generally completed in half an hour, the buttermilk was then strained off, and the butter turned into a tray; then taking a large wooden ladle with a handle about half a yard long in each hand, she took up in the ladle in her right hand about a pound of butter, which she tossed up five or six feet high, catching it with her ladle as it fell, two or three times; and then with a smart stroke at arms' length, struck it into the ladle in her left hand, when after changing hands, and tossing and catching it again, she deposited it in a tray previously rubbed with fine salt, and com-

menced with another lump. This work is performed with remarkable agility even by old women. I think that I have seen a woman of sixty work the buttermilk out of ten pounds of butter in this way in less than five minutes? The butter is then cut to pieces with the edge of the ladle, the proper quantity of salt taken up in a horn spoon and sprinkled over it, and worked into it by chopping, tossing and catching and striking it from ladle to ladle (for a Dutch woman never touches butter with her fingers.) She then with the ladle places in a balanced plate in her scales the quantity she means to have in a print, and when it is weighed, gives it a neat figure by tossing and catching it, and then with a smart stroke of her paddle brings it upon the print which is held in the left hand, having a long handle like the ladle.

As we have some of the descendants of the Low Dutch in the county of Annapolis, it is to be hoped that they retain the ancient practices of their mothers, who were well qualified to give useful lessons to many of our countrywomen upon other parts of housewifery as well as upon managing the dairy.

Many women who make good butter have the custom of skimming their milk the same morning that they churn, and mixing the cream with that which they are about to churn. This cream is left in the buttermilk, for it will not make butter till it becomes sour. Of this any persons who follow this practice may convince themselves by allowing their buttermilk to stand twenty-four hours and then churning it again.

When the strippings (the last milk taken, after three-fourths or more have been milked) are mixed with the cream, it should be allowed to coagulate before it is churned, or else a part of the butter will be left in the buttermilk. The stripping or last milk, and the first cream that rises, make the best butter. The salt used for butter should be of the best quality. That which turns damp in wet weather is not fit to salt either butter or pork. This dampness is caused by muriate of lime, a salt of which there is a small quantity in sea-water; it will attract an extraordinary quantity of water from the atmosphere, and always weaken the brine in which it is mixed.—When good salt cannot be procured, the damp salt may be freed from the muriate by the following process: make a strong brine with some of the salt, let the salt that is to be refined be put into this brine for a day, stirring it occasionally; then pour off the brine, put clean water to the salt, stir it for a few seconds, pour it off and dry the salt in the sun. To make this process intelligible, it should be observed that brine so strong that it can dissolve no more common salt, is still capable of dissolving a considerable quantity of muriate of lime.

To make good butter from milk of thin ridge-backed cows in hot weather, the milk should be scalded as soon as it is strained; the cream will then rise as thick as that of muscular broad-backed cattle, and make nearly as good butter, and the churning may be performed in less than half an hour. Care should be used that the milk is neither burnt or smoked; for this reason the pot should be set on coals, and not allowed to boil.

One part sugar, one nitre, and two good salt, will preserve butter, almost unchanged for a long time; but the butter must not have been washed with water, and when packed it must be secured from the air by covering it with a cloth dipped in melted butter, the edge of which must be soldered to the tub or crock with melted butter.

Charcoal if it could be used without difficulty has a more powerful effect in preserving butter than any kind of salt. When a boy I had occasion to see many firkins of Irish butter opened which had been kept long in stores. A part of the casks were burnt to a coal on the inside. In all these the butter was perfectly sweet; in all those that were not burnt, it was very much damaged.

THE AGE OF CATTLE AS SHOWN BY THEIR TEETH.

From the Kentucky Farmer.

My attention has been drawn to this subject ever since our Winchester fair. One of the judges appointed upon that occasion examined the teeth of several of the cattle that were presented there, and pronounced them to be older than represented.

Some of these cattle were bred in this country, and *I know* that their ages were correctly stated.

At Paris, the treatise upon cattle with the plates was introduced by one of the judges, and the teeth of some of the animals were examined to see if they corresponded. This led to suspicion that there had been imposition in some of the cattle presented.

Since that time I have examined the teeth of a number of thorough-bred Durhams whose ages I know to a day, and have found that in this stock their teeth would make them appear to be about four months in each year older than they really are. A three year old will have the teeth that in the treatise upon British cattle is said to belong to a four year old.

I attribute this to the early maturity of the Durham stock. It is reasonable to suppose if they get their growth sooner than other cattle that they will also shed their teeth sooner. I have said about four months to the year, which was the case generally. Some showed even a greater difference.

SAMUEL D. MARTIN.

BERKSHIRES.

From the Farmers' Cabinet.

Mr. Editor:—So much has been said and written about the Berkshire hogs, that people have procured them, at a heavy price, merely because they have been highly recommended in the agricultural papers of the day, and because it has become fashionable to have them, so that when a friend drops in, why, if you have nothing else to show, you must fain show your Berkshires. Now, what I am going to say will no doubt raise the hue and cry of the whole fraternity of Berkshire breeders. Yet I care not: what I seek are facts, and these must be told, and cannot be controverted. I am a subscriber to your valuable

paper, and as such, I have always been pleased to see, that your columns are open to a temperate discussion of matters and things, even when men do differ, and this fact is the cause of my troubling you for the first time with my observations. This is, however, digression. In the first place, then, the Berkshire hogs are not what they have been "cracked up to be." I have a neighbor, who has given them a fair trial, to which I have been an eye-witness. The experiment was made in this way:—two Berkshires were placed in a stable with two of the common breed, all of the same age, and were carefully fed, and at the end of nine months they were killed, and the result was, that the common breed exceeded the Berkshires in weight, one fifty and the other sixty pounds. Experiments have been made, to my knowledge, in other instances, with similar results, and even with worse credit to the far-famed Berkshires. They are not prolific: a gentleman of my acquaintance had four sows, each of which had but *one pig*, being a loss of at least ten per cent. a head, and the generality of them, I believe, do not get more than four or five. The only redeeming quality which they possess is, that they fatten easier and quicker than some breeds of the native hog; but even this is counterbalanced by their diminished weight when slaughtered. They may be considered an improvement on the common China hog, and that is about all. I have a number of common hogs in a pen for killing, which are but nine months old, but they will weigh 300 pounds a-piece by Christmas; they have been fed on nothing but the offal of a kitchen, and a run at grass, until within about four weeks, since which they have been fed on corn and boiled potatoes. Considering their feed—for after all that makes the hog—these hogs of mine will challenge competition with any Berkshires in the land, for symmetry, heavy hams, finely turned shoulders, thick and deep in the sides, &c., &c. I purchased them when small, but not being aware of their qualities, I did not preserve the breed; I shall, however, endeavor to get others, and by a judicious crossing, I have no doubt they will make a far superior hog to the Berkshire, which a number of my neighbors have given up, preferring the best of the common kind to them, and in so doing, I think they are perfectly right. I have no disposition to discourage the propagation of a superior breed of animals; on the contrary, I would do all in my power to further so laudable an object; but the Berkshire pig mania, like the mulberry speculation, is upon the wane, and if A. B. Allen, of Buffalo, New York, has in his late trip to England, brought no better specimen of improved animals than Berkshire hogs, he might have saved himself the risk of a ducking in the Atlantic for such an object.

R. S. B.

Hanover township, Northampton Co., Pa., Dec. 5, 1841.

AGRICULTURE VERSUS COMMERCE.

From the Farmers' Cabinet.

Mr. Editor:—On reading the article of your city crrespondent, G. M., in the last number of the Cabinet, I have been led to the conclusion that the writer is either an extravagant liver, or that mercantile business is not what it has been "cracked up to be." He informs us that he invested $15,000 in the year 1827 in commercial business, and has been considered ever since a *successful* merchant, and that for the fifteen years he has been in business, his living has consumed all the profits, and that he is now not worth more than when he began, if so much.

Now, if that living which has absorbed all the profits of a business with a clear capital of $15,000 has been an economical one, I should say that the sooner the capital is diverted to another channel of industry, the better; and as your correspondent wishes to escape the reverses incident to his present business, and seems desirous to turn his attention to the independent and noble pursuit of agriculture, for which he is prepared, at least in *capital and theory*, I would, therefore, for his information, and that of like inquirers, contrast his mercantile operations, and the results as given by himself, with the agricultural operations of my neighbor, S. G., and their happy results worked out, through an experience of 17 years, on land that in this section of the country is considered *naturally* third rate. Mr. G., by close application for some years to a mechanical trade, and at the same time living economically, accumulated a considerable sum, with which he purchased a poor farm of about 130 acres, and the *necessary* stock for the same, which consisted of a yoke of oxen, a horse, and two cows. In conveying an idea of the condition of this farm, I could not use language more significant than that used by Mr. G., when speaking on the subject of his commencement in farming. He stated, that his farm was *so poor* when he purchased it, which was in the spring of 1824, that "he did not believe that his two cows, pair of oxen and horse, got a belly-full of grass on the farm the first summer." This poor land cost him 30 dollars per acre; his stock and farming utensils amounted, perhaps, to about $400; this will increase the investment to $4300. The farm-stock and utensils, he informed me, "he had *about clear*." The first year he put on this worn out land 2000 bushels of lime, and the manure made in the yard the preceding winter, which was carted out with a yoke of oxen in less than a day. This lime was spread on the land at the rate of 100 bushels to 3 acres, or 33⅓ bushels to the acre; and from an experience of 17 years, he finds that a top-dressing of about that quantity repeated every five years, keeps the land in a better condition than when put on in larger quantities at more distant periods. But this experience, it may be remarked, has been altogether confined to the treatment of *mica slate land*. The lime acted with magical effect. The manure-heaps, (the farmer's gold mine,) which in the fall of 1824 had been *quarried* out, and carted on the land with a yoke of oxen in less than a day, increased, until double that power was required from ten days to two weeks to remove it from the yards and stables. The capacity of the farm to support animal life consequently increased; and in a little time Mr. G. stood by the side of his more favored neighbors as a respectable farmer, no more to receive the jocular expressions of "poor farm," "starved stock;" and the thousand and one mortifying thrusts of home-spun wit and neighborly jest. Actuated by the right agricultural spirit, he has continued his

excellent treatment of repeated liming and manuring, until he has brought his farm into a state of improvement for grazing, and indeed for any other purpose, equal, perhaps, to the best land in the country. He has fed this year upwards of 40 head of cattle; and as an evidence of the capacity of his farm to produce grain, his field of corn, containing about ten acres, averaged about 85 bushels of shelled corn to the acre. In speaking of the powerful effects of lime as a fertillizer, Mr. G. made the remark that "*if lime put a man in jail, it would soon take him out again.*" Thus conveying a good deal in favor of that valuable mineral in a few words. But is it saying too much? Every experienced agriculturist in this section of country, I am inclined to think, will unite in opinion with my neighbor G.; and I believe that if the truth conveyed in the remark were impressed more generally, we should find through the country more good land, and hear less complaint of hard times. We now have the case presented, of an investment of $4300 in agriculture, and a successful and judicious pursuit of the same for 17 years; and what is the result? First, a good living for a large family. Second, an increase of the value of the farm from $30 per acre to $90 per acre. Third an increase in the value of stock and farming utensils, from $400 to from $1000 to $1200. Fourth, several thousand dollars at interest, as profit from the farm on good security—not bank stock—besides suitable marriage portions to several of his children. I have now drawn the contrast, and without comment, would conclude by observing that Mr. G. is worth from $15,000 to $20,000, without a creditor; and is now enjoying his *otium cum dignitate* in the character of "Gentleman Farmer."

POA VIRIDIS.

Goshen, Chester county, Dec. 9th, 1841.

HINTS ON POISONS.

By Thomas D. Mitchell, M. D., Professor of Materia Medica and Therapeautics in the Medical Department of Transylvania University.

From the Kentucky Farmer.

Lexington, Ky., January 4th, 1841.

Dear sir:—Hoping that the hints and facts herewith communicated, may lead to further and more stable conclusions on the subject of *milk sickness*, than any that have yet been formed, I extract them from a manuscript work on *poisons*, in which I have been for some time engaged. You will perceive that they have no claims to methodical arrangement, and have not the charm of novelty to commend them to public notice.

That milk may be poisoned, even without criminal design, is now well understood. The milk pans in use in Europe, and to some extent in this country, have often imparted a deleterious quality to cream, and consequently to butter. Many facts directly in point could be cited from the best authorities.

But the most fruitful source of injury to milk is that agent, whatever it be, that gives rise to the disease so common to the western country, and called *milk sickness*. This unexplained source of mischief has perplexed not only the common people, but men of science, all over our own country, and not less the learned and unlearned of Europe. Hence, the inaugural dissertations, that have been repeatedly written by candidates for graduation in medicine, the numerous essays of practising physicians, in various sections of the union, and the elaborate disquisitions of eminent Germans and Frenchmen, on this recondite question. And yet, the darkness that envelopes it is dense as ever; and we see not that science promises much to dissipate the gloom.

Christison justly remarks, as others had done before, "that the milk of the cow, the ewe and the goat, may act like a virulent poison, although no mineral or other deleterious impregnation could be detected in it; and these effects have been vaguely and variously ascribed to the animal having been diseased, or to its having been fed on acrid vegetables, which enter the milk without injuring the animal, necessarily." And Orfila, to whom in conjunction with Marc was entrusted the examination of goat's milk that had proved poisonous to many persons, reported, "that no mineral poison could be detected; that none of the usual explanations were satisfactory, and that the *poisonous change in the milk should be ascribed to new principles, formed or developed by a vital process.*"

The conclusions just stated are, it may be, correct; yet there is reason to believe that the poison may be derived from some kind of vegetable matter, which could not be detected by chemical tests. Dr. Westrumb, who wrote on the poison of cheese, held this opinion; and conjectured that the milk was poisoned by the cattle partaking of a species of spurge, (*Euphorbia esula,*) which, agreeably to Viridet, caused certain fields in the neighborhood of Embrim to be abandoned by the shepherds, because it rendered the cows' milk useless. The same writer also observes, "that the cows would not touch this plant so long as wholesome pasture was within their range."

The symptoms, in the cases already referred to, as having occurred in France, were those often seen in violent cholera. At Hereford Westphalia, where, according to *Rust's Magazine*, for 1828, a woman and her 5 children were poisoned with goat's buttermilk, sent to them by a charitable neighbor, the symptoms were violent puking, dilated pupils, the eye-lids half closed, pulse small, hard and slow, epigastrium turned, abdomen contracted, bowels unmoved. These, as will be seen, were not unlike the symptoms of milk sickness, in this country. Lukewarm water was given, to increase the vomiting, after which two ounces of medicated soap, dissolved in a pint of water, with the addition of an ounce of almond syrup, were administered, and the bodies of the patients were washed with vinegar and spirits. In ten hours, all the patients were recovered.

The most careful examination of a portion of the buttermilk that had poisoned the family, failed to detect any trace of mineral poison; and the physician attributed the mischief to some narcotic herb, probably the *Ethusa cynapium*, or fool's parsley.

I have been at some pains to compare a thesis, written by Dr. Read, of Ohio, who graduated at the Medical College of Ohio, in 1832, with another thesis, written by Dr. Simpson, of Kentucky, who graduated at Transylvania University, in

1839. Both treat of *milk sickness*, and although entirely unknown to each other, their statements, professedly drawn from personal experience and actual observation, very closely agree. Both assign the deleterious agent in milk to some vegetable consumed by the cows, in *new* lands; and they testify that the effect fails when the lands have long been under cultivation. This statement accords with the great mass of evidence throughout the world, where the phenomena have been noticed. Dr. Simpson and others object to the *miasmatic doctrine*, contended for by some, in accounting for milk sickness, because, as they allege, if cattle be placed on two distant fields on the same farm, the one subject to cultivation for several years, the other in a wild state, and full of native vegetation, those in the latter will be sickened, while those in the former will retain their accustomed health, although both be precisely alike as to the influence of the usual sources of miasmatic exhalations.

In 1833, two citizens of Kentucky came to Cincinnati, anxiously seeking the cause of a terrible devastation among cattle, and human beings, in their neighborhood, which they supposed could be detected in the water, of which the animals and others drank. They handed me a jug full of the water, which was perfectly limpid, insipid, inodorous, and without sediment. The disease complained of was the *milk sickness*, and the water was imagined to be poisoned with arsenic, in some way or other. Yet, it was not possible to detect any sort of poisonous matter; in fact, the water was of the purest kind. I gave it as my opinion then, and still believe, that the milk had been deteriorated by some unknown and not discoverable agent, belonging to the vegetable kingdom. When I say "not discoverable," I refer to the action of tests, for I fondly hope that the source of this poison is yet to be ascertained.

Cheese.—For many years it has been known that cheese, owing to some unusual quality, exerted occasionally a poisonous influence. In the German journals, may be found several very interesting papers on this subject, and they go to confirm the statements so often made in this country, on the same point.

It has happened, that, of a whole cask of cheese received from a given cheesemonger, only one has evinced any poisonous properties, and that had no obvious peculiarity about it, in color, consistence or taste.

The symptoms develope themselves according to the quantity eaten, commencing in from 10 to 15 hours, but deferred, now and then, to a more remote period after the noxious meal. The first notes of distress are, pain in the stomach, vomiting, purging, and dryness of the mouth and nose. The eyes, eyelids and pupils become fixed and motionless; the voice grows hoarse, or fails entirely; the power of swallowing is impaired, the pulse gradually flags, swoonings occur, and the skin is cold and insensible. The secretions and excretions, excepting the urine, are suspended, but sometimes there is a profuse diarrhœa. The appetite is not affected, there is little or no fever, and the mind is unclouded. Fatal cases end with convulsions and laborious breathing, as early as the third, and as late as the eighth day. If the patient recover, he feels badly for weeks, and sometimes never regains his wonted vigor.

The symptoms mark this substance, as belonging to the *irritant* poisons, although, secondarily, it would seem to merit a place among the *narcotico-acrids*.

The *morbid appearances* are, inflammation of the mucous membrane of the stomach and bowels, whiteness and dryness of the throat, flaccidity of the heart, and a strong tendency to resist putrefaction.

That cheese is sometimes poisoned with red lead, that is present in the annato employed to color it, cannot be doubted. Mr. Wright has furnished a good paper on this subject in the Repository of Arts, vol. 8th, page 262. It presents undoubted proof of the poisonous action of some fine looking Gloucester cheese, in which the red oxide of lead was easily detected, by a neighboring chemist. Samples of the annato employed as a coloring for the cheese, were found to be strongly impregnated with the lead. This very dangerous sophistication can be readily detected, by macerating a portion of the suspected cheese in water impregnated with sulphureted hydrogen gas, acidulated with muriatic acid. A brown or blackish color is instantly struck, if the minutest portion of lead be present.

But the most embarrassing cases of cheese poisoning are those in which the ordinary tests fail to discover any evidence of poisonous adulteration. These are of frequent occurrence. About 12 years ago, a large number of persons sickened, after eating of a fine looking and well tasted cheese, which was one of a cask, more than half of which had been sold in the same village. There was no fatal case, but some persons were made extremely sick and suffered great gastric and intestinal distress. I was requested to make an examination of the cheese, and portions were sent to others, for the same object. After a careful research, no poison could be detected by the ordinary means, and we came to the conclusion, that the source of the evil must have been derived from some vegetable matter, eaten by the cows.

The inquiries of Serturner and others go to make it probable, that the poisonous property of cheese often depends on two animal acids, analogous to, if not identical with the caseic and sebacic acids, which we know to be, chiefly, the source of evil in poisonous sausages. It is certain that caseic acid, obtained from cheese, will destroy the smaller animals very promptly, and that the sebacic is even more rapidly fatal.

I feel confident that not a little of the cheese that induces poisonous effects, owes its pernicious quality to the same, or to a similar vegetable matter, that is generally regarded as the cause of *milk sickness*, in new countries. If the milk and the cow that yields it, may be poisoned, as they certainly are, what can prevent butter and cheese made from such milk, from sharing in the evil?

Fatty matters.—By some process, not by any means understood, certain animal matters are so changed, although their exterior may appear as usual, that the eating of them gives rise to very distressing symptoms, and sometimes causes death. Some have supposed, that there is carried on, silently and imperceptibly, a modified putrefaction, which changes the quality, without affecting the form or apparent condition. The articles, most usually altered in this or in some other way, are *sausages*, *lard*, *pork* or *bacon*, and *butter*.

The *poison of sausages* has become so notorious, in some parts of Europe, as to have been the subject of a thesis, a prize essay, and other papers. In the Wirtemberg territories, in Germany, we are assured that 234 cases of this kind of poisoning occurred in about 34 years; of which number, 110 proved fatal. In the winter and spring of 1834, similar cases occurred in the neighborhood of the Black Forest, in the territories above named. The symptoms are reported to have been very alarming, and several individuals died. The food eaten by these persons was the sausage of the country, and liver puddings. The former were reduced to a pulp in the centre, were very bitter and rancid, and smelled like cheese. The puddings had been evidently decomposed, as they were quite sour. The remedies found most successful in these cases, were immediate vomiting, a purgative draught of Glauber's salt, and clysters of vinegar and soap.

It is stated by various writers, that the symptoms of sausage-poisoning do not begin until twenty-four hours after the noxious meal has been taken. This is said to be owing to the great indigestibility of the fatty matter, which enters the food. Pain in the stomach, vomiting, purging, dryness of the mouth and nose, are usually the first symptoms. The eyes and eyelids, and next the puplis become fixed and motionless; the voice fails or is entirely lost; deglutition is difficult; the pulse gradually sinks, frequent swoonings come on, and the skin becomes cold and insensible. The bowels are sometimes torpid, at others the very reverse. The appetite is not impaired; there is little or no fever, and the mind maintains its usual tone. Fatal cases end with convulsions and great difficulty of respiration, between the third and eighth days. Such is the shock imparted to the system that even in successfully treated cases, the effects are felt for years.

The *morbid appearances*, in the dead body, are inflammation of the mucous membrance of the stomach and bowels, whiteness and dryness of the throat, thickening of the gullet, croupy deposition in the windpipe, great flaccidity of the heart, and a morbid tendency to resist putrefaction.

What is the nature of the change effected in the sausage, no one has been able to reveal. It has been asserted, that the poisonous principle resides in a fatty acid, called by *Buckner* the *Botulinic* acid. Experiments with this acid, as obtained from the spoiled or poisonous sausage, showed the same results as are witnessed in animals that partake of the sausage itself.

In regard to the poisonous quality of *lard*, under peculiar circumstances, we have little to say, that is satisfactory. Mere rancidity does not seriously affect it. Keeping it in copper or cedar vessels, may render it more or less deleterious.

In the winter of 1838-9. I saw a portion of lard, sent to Professor Peter, for examination, in consequence of having sickened those who partook of it, in any shape. Some were affected pretty severely, though no one died. The lard looked as well as usual, and had no particular smell nor taste. The examination failed to detect any thing of a poisonous nature. It is quite possible, that lard may be poisoned by the empyreumatic oil, resulting from the application of a strong heat to a small portion of it. It is known that this oil, as produced by the destructive distilation of lard, is decidedly poisonous. Five drops, passed into the throat of a bird, nearly killed it.

Pork, in the fresh, as well as the cured state, under the name of *ham*, *bacon*, &c., has often evinced poisonous properties. I am of opinion, that some of the cases of poisoning, as they are termed, by fresh pork, were dependent on other causes. In the summer season, when green or ripe fruit is freely indulged in, almost any kind of fresh meat, not well seasoned, will derange the digestive apparatus, and it has frequently occurred, that true and fatal cholera morbus has resulted from such imprudence.

In the *Philadelphia Medical Examiner*, for Jan. 1839, we have a short paper headed, "poisoning from *pork*," furnished by a physician of Illinois. The patient died, it is true; but he had been laboring for months under gastro-enteritis, was frequently attacked with colic, and often much disturbed by any sort of food that did not suit his condition. Under these circumstances, fresh pork was freely eaten, and soon after, a quantity of grapes, and the man died in nine hours after the commencement of the attack, which did not begin until the day after the pork meal.

I will not say, however, that young pork may not acquire a *poisonous* quality, and kill, as the consequence; but the cases that I have met with, are not satisfactory.

In reference to ham, and all kinds of bacon, the evidence of occasional poisoning is conclusive. This may be the result of very different causes. The meat may be poisoned, in the act of smoking it, as is known to have happened to certain soldiers in Corsica, who smoked their meat with mezereon and other woods. In the careless manner of gathering rubbish for this purpose, many poisonous articles may be accumulated, and the meat may thus be effectually poisoned.

The more common source of poisoning in bacon, however, is doubtless the same fatty acid that renders sausages so deleterious, in some vicinities, and in certain seasons.

The history of a family poisoned by eating a ham-pie, made at a Parisian pastry-cook shop, is deeply interesting. The examinations, made by *Ollivier* and *Barruel*, to detect some kind of metallic poison, totally failed, and the able chemists were forced to the conclusion, that the meat had experienced a change similar to that which gives a poisonous quality to German sausages and ham.

In three hours after dining on the ham-pie, the master of the house was seized with general uneasiness, cold sweats, shivering, violent gastric pains, frequent vomiting, burning thirst, extreme tenderness of the abdomen, profuse purging and very violent colic. The poison was evidently of the *irritant* class, as the same symptoms attacked a daughter aged twenty-seven, and another aged nine. The physician who was called in supposed that verdigris, or some other salt of copper had been communicated, by the pastry-cook's copper moulds. By a vigorous course of treatment the patients recovered. The plan pursued is not stated. It should be borne in mind, however, as a reason for suspecting a copper poison, that the alvine discharges were as green as the common house leek.

Dr. Geisler has given, in *Horn's Archives* for 1828, the account of a family of eight persons,

evidently poisoned by bacon. Their symptoms, with the addition of delirium and loss of recollection, were the same with those resulting from the sausage poison. A remarkable circumstance in this history is, that the father escaped unhurt, "having stewed his bacon, while the rest ate it raw." It is supposed, that the process of stewing dissipated or decomposed the fatty acid, so as to render it harmless.

In the London Medical Gazette, vol. 19, 378, we have the case of a family poisoned by bacon, or rather, several members of the family. All who partook of the meat were sickened, and one of the children died, after severe gastric and intestinal distress, which continued for more than three weeks. Severe spasms and violent retching with dreadful headache were the attendant symptoms. *Post mortem* examination revealed extensive gastric ulceration.

The difficulty of deciding, satisfactorily, as to the true source of poisoning, in animal matters, has been alluded to. We may remark, further, that many families have been sickened and some persons fatally poisoned, by eating the meat, variously cooked, of animals that had sickened and died. The symptoms in these cases, are those of *irritant* poisoning, such as gastric pains, vomiting, severe colic, diarrhœa, &c., &c. In all these cases, it is quite probable, that the fatty matter of the animal experiences a change such as occurs in the German sausages, though this is only a conjecture. It would seem that the proper course of treatment would be to dislodge the meat from the stomach, and then to allay the irritation, by means of anodynes and rubefacients, blisters, &c., to the epigastric region.

The fatal poisoning from a wound inflicted by the dissecting knife, is too well known to require any detailed notice here. That such wounds are not always injurious is certain; and we are at liberty to suppose, that when they do prove alarming and fatal, it is in consequence of the change already named, in the fatty matter of the dead body.

In view of all the facts above stated, in reference to the poisonous agency of animal matters, may we not very rationally extend our future researches in the following queries, in the hope of reaching the truth at last?

1st. Is it not probable, that the fatal effects attending the use of the meat, milk, butter, cheese &c. of cows, as well as of the flesh of other animals, may depend on the noxious influence of *many* articles in the vegetable kingdom?

2d. Is it not probable, that *some* cases of milk-sickness, as well as the disastrous train of symptoms that follow the use of various animal matters, as articles of food, may be fairly ascribed (conformably to Orfila's suggestion) to *new principles formed or developed in the living animal, by a vital process*, and wholly independent of the pernicious agency of *any* vegetable matter?

Perhaps some of your readers may think there is no sort of relation between the several facts contained in this article. On this point I beg to differ; and hoping that some good may result from their perusal, I submit them to the intelligence and good sense of all candid inquirers.

AN ESSAY ON THE MAKING, THE PRESERVING AND THE APPLYING OF MANURES.

For the Farmers' Register.

This subject, as the caption indicates, is divided into three parts: 1st, the making; 2d, the preserving, and 3d, the applying of manures; and I shall treat the subject according to the above division. And here it is obvious to remark, that this subject is to the farmer one of primary importance; for in this section of country our lands are naturally very poor, or by long cultivation have become completely exhausted. It is therefore a question of the gravest importance, how we can most economically, and at the same time most certainly, impart that fertility to our lands, which will make them capable of producing large and profitable crops.

This subject, at this time, derives an additional importance from the fact that, owing to the exceedingly deranged state of our currency, the high rate of exchange to which we have to submit, the consequent depressed state of the market, and the extravagant and constantly increasing taxation which is imposed upon us, for the support of legislation—our salvation, and indeed our very solvency as farmers, depends upon the *large amount* of produce we can throw into the market. The time has been, as many of us well recollect, when a barrel of corn would bring $10, or a bushel of wheat $2.50, or a hogshead of tobacco would bring $250, and in some instances a still higher rate. Now, although I am no advocate for inflated prices such as these, yet it is obvious that a reaction has taken place, which has produced a state of depression still more injurious; for if the farmer can *now* get one third, or even one fourth as much for the same articles, he considers himself as having made a good sale. Our farmers are at present in this strange situation, a situation which operates with peculiar oppression upon them, that whilst their expenses with the blacksmith, with the shoemaker and grocer, and for labor, generally remain the same, and in some instances are even enhanced, nearly or quite all the products of his farm are at a slow sale, and at greatly depressed prices. The only remedy in this case is greatly to increase the amount of disposable products. Instead of *one* hogshead of tobacco, or *one* barrel of corn, or *one* bushel of wheat, we must have at least *three;* and even then our net income, compared with former times, will be greatly curtailed.

And now the question is, how are we to secure this greatly increased product? It is evident that our lands, in their present poor and exhausted state, cannot supply it. The only alternative then is to enrich the lands, if we would increase their product. And here I will remark, that bad as the times are, I have no idea of "giving up the ship," for I do know, from actual experiment, that by a judicious course of manuring and cultivation, it is practicable to increase the product of our lands some three or even four-fold. Of all mothers, Mother Earth is the most generous; the more liberal we are to her, the more liberal she will be to us.

Having made these preliminary remarks, I proceed at once to the first branch of my subject—the best method of making manures. And here I intend to confine myself to the actual circumstances of that section of country in which the

great majority of our Agricultural Society reside. In some portions of our state, large and even inexhaustible quantities of marl and lime may be commanded at comparatively little expense. Here then the very best manure is at once furnished to the industrious husbandman. But as comparatively little of these articles has as yet been found in our county, I shall say nothing as to their preparation or application. Indeed the subject, as presented, was intended to embrace, not the *calcareous*, but the *putrescent* manures.

I would observe, then, that the great basis of this article is vegetable matter. This matter, when reduced to a state of decay, is manure, but the quality may be greatly improved, and the quantity greatly increased, by a proper mixture of animal excrement. Stock then, of some kind, if not essential, is highly necessary to the making of manures. The whole subject then resolves itself into this one thing—how are we to employ our stock, so as to make them most available in this important particular? Of animals, there are three classes in common use among us—the horse or mule, the cow, and the hog. As to the first, I suppose there is but one opinion among us, and that is, that when not employed, he ought to be confined to his stable, and there plentifully supplied with litter of some kind. How long this litter ought to accumulate before it is removed, is a matter of some doubt. Some are in the habit of removing it every morning; but after paying considerable attention to the subject, I am of the opinion that it ought to remain, until by its great heat it endangers the health of the animal. It is a fact well ascertained, that decomposition goes on much more rapidly in large than in small masses. The best plan, therefore, is to keep the stable clean, not by throwing out the old mass, but by putting in frequent supplies of fresh litter. That which is already undergoing decay, will greatly expedite the decomposition of the fresh supplies. But as during this process not only great heat is evolved, but also a large amount of gases is thrown off, there is great danger of allowing this thing to proceed too far. Every farmer ought therefore to pay special attention to the condition of his stable, and when the heat becomes excessive, or when on opening the doors the slightest degree of offensive effluvia salutes him, he ought forthwith to remove the whole. My plan has heretofore been (and I am more and more pleased with it) not to throw it out in a mass, and there allow it to fire-fang, or to be torn to pieces by the hogs, but to carry it directly to the field, where it is spread, or to deposite it in small quantities, ready for future use. Fresh litter then is put into the stable to a large amount, and thus a foundation is laid for another supply.

Two methods have been successfully practised to make *cattle* useful in supplying manure. The first is to confine them to their stalls, in which case the same process is to be employed as with the horse or mule; or, 2dly, to let them have the general use of the farm pen, restricting them to their stalls only in bad weather. The latter, especially where the farm pen is kept well littered, I think the preferable mode: for on this plan, much time is saved in feeding, it being much easier to scatter the food over the farm pen, from which each one takes his portion promiscuously, than to place it in each separate stall. After taking their food they either remain in the farm pen, where their droppings are left, or if the weather be bad, they retire to their shelter and deposite them there. Here also great cleanliness ought to be observed, which can easily be secured by frequent supplies of fresh litter. Nor let any one grudge the time and care of this apparently troublesome process; for the more litter he furnishes, the more manure he will have for his exhausted fields.

There is also a third method of employing cattle in the enriching of land, of which I think very favorably, and that is by confining them to a small portion of land, until this is properly enriched, and then removing them to another portion. This is done with considerable convenience, by means of what are commonly called moveable pens. The size of the enclosure will of course depend upon the number of the cattle, and the length of time it is intended to keep them on one spot. By this expedient, especially where the number of cattle is great, a large quantity of land may be greatly improved every year. And it is done with this great convenience also, that all the labor of carting out the manure to the field, and then of spreading it, is saved. But it ought to be observed, that on this plan the land ought to be ploughed *before*, and some say *after*, it is manured. In the latter, however, I do not agree with them.

But there is another animal, the value of which has been heretofore greatly overlooked, and therefore greatly neglected, which, if properly treated, will show himself not inferior to any other in the great business of manufacturing manure, and that is the hog. In England, where this great concern is attended to with an economy and success, altogether unknown among us, each hog is taxed with ten loads of manure every year; and when he is treated properly, and is furnished with suitable materials in sufficient quantities, he invariably acquits himself as a clever fellow. But on this point I must be a little more particular. I would, then, confine my hogs in small pens, say 10 feet by 8, with a floor sloping considerably to the front. In rear of this should be another pen, say 8 by 6, well sheltered, to which the hogs might have free access in bad weather, as also for sleeping. This will afford accommodations for five or six hogs. In the front or larger pen, besides the trough for water, I would put large quantities of litter. In addition to this, I would furnish regular supplies of dirt, taken from the scrapings of roads, ditches, &c., or of rich deposites of mud collected from marshes and other low places, and, as still better than this, all the ashes I could command, and over the whole strew corn as food for the creatures. And now would commence their work in good earnest. That snout of theirs, which to my fields and ditch banks is such an annoyance, would here display itself to my immense advantage. In a very short time, they would thoroughly mix and incorporate this whole mass, so that new accessions of similar materials would be necessary. When this is the case, put in fresh supplies, and thus continue till the mass becomes inconveniently great, then remove the whole, and begin the process anew. If, upon cleaning out, the litter is sufficiently rotted, carry it directly to the field; if not, (and this is frequently the case,) let it be heaped up, in which state it undergoes a slow decomposition, and in time will be fit for removal. In this way the 5 or 6 hogs will make from 50 to 60 loads

of manure during the year. According to this, a hundred hogs (and many farmers keep that number, or even more) will make a thousand loads, and this is enough to enrich twenty acres of poor land, or to keep forty in a state of continual improvement.

I have now finished what I had to say as to the stable, the cattle shelters, and the hog-pens, as so many sources of manure. But there is another resource which, in a treatise of this kind, ought not by any means to be overlooked, and that is the farm pen. It will be conceded, that no farm can be properly conducted, without this indispensable appendage. As to the *location* of the farm pen, all will agree that it ought to be situated immediately adjoining the barns, the stables, the cattle shelters, and such other buildings as we use for storing away our winter supplies of food. Here the cattle are fed, and here we deposite the corn stalks, and wheat straw, and damaged provender, and weeds, and litter from the woods, and such other materials as we wish the cattle to tread down and to convert into manure. This is in fact the great depot of all the raw materials, which we intend to work up in the great manure workshop. But if we would conduct the concern with efficiency, we must keep a plentiful supply of materials on hand; and if with these we mix small quantities of lime, or larger quantities of wood ashes, or even of coal ashes, the quality of the manures will be greatly improved.

As yet, I have said nothing as to what is commonly called the *liquid* manures of our stock. In older countries, where the population is very dense, and where every foot of tillable land is necessary to raise the food needed by the people, and where, of course, they cannot command, from the woods and the fields, the quantities of litter which we can, there great care is taken to collect and preserve all the liquids of their stock. For this purpose their stables, both for horses and cattle, are furnished with cisterns or tanks, into which all the liquids are carefully drained; and after they have undergone the necessary putrefaction, are pumped out, and sprinkled over the crops, and great benefit is said to result from the application. But in this country, where population is lamentably thin, and woods and weeds are lamentably plenty, and large supplies of litter are always at command, I do doubt if a discreet economy would warrant the expense and trouble of collecting and applying the liquid manures. And my doubt is founded in this, that just in proportion as we increase the *liquids*, we diminish the *solids*. My theory is, that the liquids are quite as necessary, and even more so, in exciting and hastening the decomposition of the litter, than the solids are. If therefore we drain away the liquids, we arrest or at least retard the decomposition of the litter, and therefore a less quantity of manure is made. No one, I hope, will understand me as detracting from the value of liquid manures. My plan is to furnish a sufficiency of litter to absorb the whole. The liquids therefore are not only secured, but they display their great efficacy by rapidly converting the large quantities of litter into a valuable manure.

But as the term *litter* occurs very frequently in this treatise, perhaps I ought to explain precisely what I mean by it. It is, first, the corn stalks, which ought to be cut down as early as possible, and deposited upon the farm pen, and thereby passing the carts and wagons over them, and the trampling of the cattle, and the rooting of the hogs, they are broken down and made fine; so that by the next spring a considerable portion of them, perhaps half, are in a condition to remove from the top. These are carried to the corn field, and when properly managed are a great aid in the subsequent crop. The balance are left till the fall, when the most of them are sufficiently decomposed to top-dress the grass lands with. Besides this resource for litter, the fields which produced small grain, if in good heart, and none others are worth cultivating, will be found, early in the fall, well covered with a large crop of the wild carrot and other weeds, intermixed with young clover and other grasses. These ought all to be mowed down, and carefully stowed away as litter for the stable and hog pens, and I know of no material of which a richer and better manure may be made. And then they who cultivate grass on a large scale know that portions of their fields, particularly along ditch banks, and low sunken places, and corners of fences, are much infested with weeds and briers and coarse grass, such as will not make merchantable hay; these ought all to be taken care of in the same manner and for the same purpose. And then last, "though not least," leaves from the woods. When all these sources are carefully husbanded, every one must see, that an immense amount of valuable material will be stored away for the manure pile. Indeed I will venture to affirm that, as a general thing, not one farmer in twenty avails himself of the abundant supplies which he has at his command, to enlarge the stock of his manures. And as long as this continues to be the case, our land must necessarily remain poor and unproductive. For my part, I would leave the song of "*hard times*," to be sung by the merchants and other traders alone. It is a chant which very illy befits the mouth of the farmer. He, with his rich land, and habits of economy and industry at home, is an independent man. Whilst, therefore, others harp upon the ruinous exchanges, the scarcity of money, and the villany of the banks, let the farmer look well to his manure pile. Above all, let him feel that his great business is to add to the fertility of his land *every day*. Then, when others yield to the pressure of the times and become insolvent, he, with no money deposited to his credit in the banks, but with his fat hogs, his full corn crib, and his barns well stored with all kinds of provender, will remain firm amid the general wreck.

I close what I have to say on this branch of the subject, with one remark, and that is, that the quantity as well as the quality of manure will be materially affected by the quantity and quality of the food which we give to our stock. If we dole out poor food to them in limited and stinted supplies, the returns in the way of manure will be of the same character. Whereas, if we supply them with generous food and with a liberal hand, the returns will be of the same nature.

2dly. The next thing to be considered is the best mode of preserving manure. This is also a very important part of the subject; for it is surely very bad policy, to waste or destroy that which is so valuable to us, and which it has cost us so much time and labor to obtain. We should justly consider that man a maniac, who would wantonly

throw away his purse well stored with silver or gold, a case, by-the-by, which *could* occur with but very few now-a-days. Equally foolish would that man be, who would suffer his manure, the strength of his land, and the very basis of his wealth, to perish for want of proper preservation. And here I would remark, that the great enemy to be guarded against is inattention and indolence. As a general rule, manures ought always to be used, or at least placed in a situation to be used, as soon as they are thoroughly made. Manures consist of vegetable and animal matters variously combined, in a state of decay, which, in consequence of the decomposition in actual progress, are constantly evolving certain rich and nutritious gases, and these gases, if not imbibed by other living vegetables, are constantly escaping in the air. The manner in which manures benefit the growing crop, whether by entering into it in their solid state, or whether they are first decomposed into their original elements, these elements enter into it, I shall not now undertake to determine. It is sufficient for me to know that manures, as soon as fairly made, begin to waste away. Here then is a loss; nor is this loss occasioned merely by what is commonly called evaporation. It is greatly accelerated, if not principally caused, by what may be properly called a *combustion*. To satisfy any one of this, let him put a small quantity of manure in a heap, a single cart load is sufficient for the experiment, and in 48 hours or less he will see a dense vapor issuing from it, and on digging to the centre, will find that a great heat has been generated, so that a real combustion, commonly called *fire-fang*, has actually commenced. Now it is obvious, that unless this destructive process is arrested, a considerable portion of the solids will not only be burned up, but in this process we shall lose a large share of the nutritious gases also. The best preventive that I know of for this waste, is to remove the manures to the field as soon as fairly made, and then spread forthwith, or if inexpedient to spread, to place in small heaps, not exceeding 5 or 6 bushels to each. Some farmers are exceedingly afraid that their manures will sink down into the ground, and thus become inactive. I will cheerfully incur this risk, provided you give me a guaranty that they will not rise up, and be dissipated in the atmosphere. The whole secret, therefore, as to the preservation of manures, resolves itself into this one thing, to mark when they are thoroughly made, and then immediately to use them, or, at least, to place them in a situation for future use. And the longer this thing is delayed, the less manure you will have, and of course the greater loss you will sustain.

The third and last thing to be treated of is the best mode of applying manures. There are, as far as I know, but two theories on this subject; and each theory has its strong and decided advocates. The first is to use it as a top dressing; the other is to spread and immediately cover with the plough. After a long and close observation on this subject, I have come to the conclusion, that each mode, according to the circumstances of the case, is the correct one. If the manure be fine and fully made, then I hesitate not to say that the most judicious mode of application is in the way of a top dressing. If on the other hand it is coarse and but partially made, then it ought to be covered with the plough. And my reason for this course is, that the finer and well made, manures *being now in a state to act availably*, I wish to continue in that state as long as possible; whereas, I wish to change the state of the coarser, by subjecting it to as rapid a decomposition as I can effect. If, therefore, I have the coarser on the surface, it will but bleach in the sun; but if I cover it to a small depth, it will imbibe moisture, and, as it rots, impart its nutritious properties to the growing crops. On this plan, I permanently secure that which is fully made, *in its present state;* whilst, by covering, I subject the other to a continued decomposition, and thus bring it into an available state also.

The main argument by which the advocate of the covering system supports his theory is, that manures, when left on the surface, are continually subject to evaporation, and therefore lose their valuable gases and other fluids. Now what are these gases? Every chemist will tell you, and that upon actual experiment, that they are fluids, so subtle, so elastic, that it is almost impossible to confine them. This being the case, can any suppose that they can be confined by a covering of loose porous earth, such as land always is when fresh ploughed? These subtle substances —if I may be allowed the expression—would laugh at a confinement of this sort. No! the chemist can scarcely confine them in his retorts, prepared with the greatest skill. In vain then will you attempt to confine them by a slight covering of loose earth. But suffer me further to inquire, what is the *object* of confining them? Is it, that when thus covered up, they may enter into the plant by means of its roots, and thus nourish it? But it is a fact, admitted as such by every body, that the roots are not the only appendages of the plant by which it receives its nourishment. The *leaves* are essential to the plant in this respect. Hence, if you destroy the foliage of the plant, it sickens and dies; and hence caterpillars and other worms are so destructive to fruit trees. The leaf then is intended to perform certain primary functions, connected with the health and thrift of the plant. For this purpose it is furnished with two surfaces, by which, it is said, it performs certain offices very similar to respiration in the animal creation. By one, it receives the gases, and by the other, it throws them off, when they have been sufficiently elaborated. It appears, therefore, that we should but partially do our work, were it in our power, to place these fluids in a state to be taken up by the roots alone; the *leaves* require their portion, and this is indispensably necessary to the healthful thrift of the plant. My theory is simply this, that between the plant and its several parts, and these various gases, there is a strong affinity: when therefore the attraction to the root is strongest, the gases go there, and when the attraction to the leaf is strongest, the gases go there, and this is the case, whether the manures be left on the surface or covered up. In the one case, they descend to the root, in the other they rise up to the leaf, and the peculiar position in which you place them makes very little difference, for their great fluidity prepares them for the change. I have already stated that the great object is to preserve the finer manures as long as possible in their present state. Being now available, the great object is to con-

tinue them as they now are. And now the whole question is narrowed down to this single point, in which state are manures most susceptible of preservation, when left on the surface, or when partially covered? On this subject, I suppose, there can be no division of sentiment. Every one will agree, that vegetation undergoes a much more rapid decay when covered than when uncovered. In accordance with this, every farmer ploughs in his green crops, or dry crops either, when he wishes them to undergo a speedy decomposition. I conclude, therefore, that surface applications of manure are to be preferred.

COCKROACHES.

From the American Farmer, for 1827.

Having seen a plan proposed some time since, in the Farmer, for driving the cockroach from books, furniture, &c., by the use of spirits of turpentine, for the benefit of those infested with them, I propose the following plan, the success of which I have fully tested. Take an ounce vial and put in sweet oil or soap-suds, to the depth of an inch, and set the vial against the books, shelves, or places infested, so as to facilitate their getting in. They will readily go into the vial, and are unable to return, as the oil or suds renders it impossible for them to climb up the sides of the vial. I tried this plan in a closet very much infested, and in a few weeks the vial was filled within an inch of the neck. I emptied it, and in a few days there was not one to be found in the closet. If you consider this worthy of publication, it is at your service.

ON LIME AS MANURE, AND CALCAREOUS FORMATIONS OF THE MOUNTAIN REGION.

[The remarks and inquiries addressed to us by one of the most intelligent and successful improvers of land in western Virginia, concerning the calcareous tufa of the limestone streams and other calcareous substances of the mountain region, have induced the republication of the following letter, which presents views that we long ago took up on that head, and which we have since had no cause to alter, nor means to test, by further observations.—Ed. F. R.]

From the Winchester Republican.

Agricultural Society of the Valley—May 29, 1826.

A letter from Wm. B. Page, esq. enclosing a communication from E. Ruffin, esq. was received, and the communication from Mr. Ruffin ordered to be printed.

Coggin's Point, October 20, 1825.

Dear sir,—Your letter reached me only a few days before the commencement of a long journey, which has prevented my attending to your request until this time. I shall now endeavor to answer your inquiries as fully as my limited means will permit; though I cannot expect to furnish any thing of more value than loose hints, which perhaps may serve as subjects for a Frederick farmer to think about, but not as rules to direct his practice.

It should be observed, that though I have applied *mild lime* to more than 500 acres, scarcely any use has been made by me of *caustic* or *quick lime;* and therefore I have no practical knowledge of its peculiar solvent power. According to the theory of Davy, while lime continues caustic, it acts powerfully on all animal and vegetable matters in contact with it—breaking down and rotting whatever is hard, insoluble and inert—and driving off or destroying whatever is already rotten, or fit for the immediate use of growing plants. Hence, we may infer that the mere causticity of lime will be serviceable or hurtful, according to the state of the vegetable ingredients of the soil. But as usually applied, quick lime becomes as mild as before burning, by again absorbing carbonic acid from the atmosphere, before its solvent power can be exerted. Nor do I think this power can safely be used in our climate, except in very few cases; as on broom-straw old fields, or newly cleared poor woodland, which contain much inert, and but little active or soluble vegetable matter. Under our hot summers, vegetable manures rot too fast, and the cultivator should endeavor to retard, rather than hasten their decomposition. But a different practice may be proper in colder climates. Frequent applications of caustic lime must be highly useful in Scotland, for example, where vegetable matters, unrotted and insoluble, have continued to accumulate and extend, until one sixth of that country is covered with barren peat.

It follows, then, that however powerful may be the effects of caustic lime, they must be considered as separate and distinct from the durable and far more valuable effects of mild lime, or calcareous manures in general. The same substance, (quick lime) will at different periods act as two kinds of manure, entirely different in their modes of operation; and, on the other hand, many substances having different names, (as old burnt lime, chalk, shells, limestone, leached ashes, and marl,) all have different proportions of the same calcareous ingredient, and ought to be considered as the same manure. Yet most writers class these manures under different heads, without knowing the sameness of their predominating qualities; and many absurd practices owe their origin and continuance to the same error in our practical men. Thus the industrious farmers of Long Island have long used, as a manure, leached ashes, brought hundreds of miles by water: they have even sometimes stripped the soap factories in Petersburg, paying five or eight cents the bushel, besides the expense of so long a transportation. Yet, whatever benefit was obtained from this manure, they might have found as well in the fossil shells which I believe lie beneath the surface of all Long Island, and which, even if carried the same distance, might be applied at less than half the cost of an equal value of ashes. Your remarks show that we agree in this view—and that you correctly consider our calcareous manures as substantially the same, though your practice may be confined to calcined limestone, as mine has been to fossil shells.

I now proceed to answer your particular inquiries. You ask my "opinion as to the utility of lime as a manure in general; to what crops and

in what mode it is most advantageously applied; and whether there is reason to believe that it would be adapted to limestone soil like ours, originally rich, but in many places much worn by cultivation?" I never was in Frederick, and know but little of its soils, except that they generally differ from those on which my practice has been tried, and with which I am best acquainted. Your own judgment can best determine when any practice which may be profitable here, will also be advisable in your situation; and for that purpose, it will be necessary for me to state concisely my view of the means by which lime acts, and the different effects produced, referring you for the reasons on which they rest to my essay in vol. 3, American Farmer.

The principal action of both sand and clay is mechanical, and therefore large proportions are required to produce perceptible effects as manures. But from the presence or absence of a very small proportion of lime in soils, important results are produced, because in common cases lime acts chemically, and not mechanically. Clay has but little power, and sand none, in holding vegetable or animal manures: but lime combines with them strongly, fixes them in the soil, and yields them solely to the growing crop. Hence, without lime, no soil can be long otherwise than barren. Though most soils are more or less deficient, none capable of supporting vegetation can be entirely destitute of lime in *some* form. This property of lime, of combining with and fixing manures, may be advantageously used on every soil which nature has not made abundantly calcareous: but this benefit must necessarily be gradual, never quickly perceptible, nor can it be expected at all, unless on soils under meliorating culture, which will allow more to return to the earth than is taken off.

The next most important effect of lime is that of neutralizing acids. Lime is never furnished by nature pure, as it attracts acids so strongly as always to be combined with some one or other—and most generally with *carbonic*, the weakest and most abundant of all, and with it forms *mild lime*, or *calcareous earth*. This acid is driven off by strong heat, leaving the lime then pure, (or caustic,) or it will readily yield its place to any stronger acid which may be brought in contact. Thus, if a bit of chalk or limestone be thrown into diluted *aqua fortis*, the strong acid seizes on the lime, the weaker escapes in air bubbles, and (if enough lime is used) the acidity and other qualities of the aqua fortis are entirely destroyed. Such a process takes place in most of our soils when lime is applied, and probably may in some of yours. Decaying vegetables or other causes produce acids, which either combine with lime and form useful manures, or if all the lime has been already taken up, poison both crop and land. The mark of an acid soil is a vigorous growth of pine, whortleberry or sheep-sorrel. When enough lime (whether mild or caustic) is applied to a soil of this kind, the poisonous acid is destroyed, one cause of barrenness removed, and the first crop may be increased from 50 to even 200 per cent. before any other effect of lime comes into action.

There are several other minor benefits from lime, with a detail of which I shall not trouble you; for if my opinions are well founded, the two properties of fixing manures and neutralizing acids are sufficient to show that lime (and nothing else but lime) will enable us to make durable and profitable improvements on such soils as are naturally poor.

Since the publication of my early experience of marl, (as we improperly call the bed of fossil shells,) my opinion has suffered no change or abatement as to the value of that manure. I have extended the improvement over my farm as fast as possible, and generally with great benefit, though sometimes to loss. Not fearing any injury, I applied in most cases from 500 to 800 heaped bushels of shell marl per acre, about one third of which, on an average, was pure calcareous earth —and the crops of the present and preceding year have given proof that I was too lavish in the application. Several of my neighbors found equal injury from smaller dressings, but on land not secured from grazing, or more severely cropped than mine. Where equal quantities were put on, the injury on my land was in proportion to the poverty or sandiness of the soil, or the deficiency of vegetable matter: under opposite circumstances, no injury was produced even where 1000 to 1200 bushels had been laid on. The remedy for this error then is apparent—and where too much mild lime has been given, the soil is made more able to retain and profit by the vegetable matter which is then wanting. No soils have yet suffered in this way except such as were before *acid*, which induces the belief that the *salt of lime* (formed with the vegetable acid) causes this disease—and unless enough dead vegetable matter be present for this salt to act on, that it will injure the growing crop. Though I have lost some crop, and much labor, by these heavy dressings, the result has not discouraged me; it only shows the manure to be much stronger than I thought, and that less will be sufficient to produce either benefit or injury. Candor requires the statement of loss from marling, which however could not have occurred either to my neighbors or myself, if the advice I formerly gave had been attended to, viz.: to apply the manure in small quantities, and repeat it as might be found necessary; and not to use it at all, if exhausting cultivation was to be continued. No first crop after marling has suffered by this disease, (and its marks are too evident to be overlooked;) and when it has occurred in the second rotation, it never reduced the crop so low as the product of the land in its previous state. Another fact is worthy of observation: on spots where wheat of this and last year's crop was almost destroyed by overliming, clover stood and grew so well, that it promises to draw off the excess of the *salt of lime*, or otherwise to furnish enough vegetable matter to balance and cure the evil. Of this, however, my experience is as yet too limited to be considered as furnishing conclusive evidence.

When not diseased, the crops of the second rotation have been always as good, and sometimes much better, than the first crops after the fossil shells were applied. This increase was looked for, and promised, before facts had proved this effect of lime. My later experiments with first dressings give results similar to those already published. But the most satisfactory proof I can offer you of the value of calcareous manures, is a statement of my crops of wheat, which having been generally my only article for sale, and always the most important, as much as possible was raised,

and the average product may fairly be supposed to mark with tolerable accuracy the increase of fertility in the farm.

The last crop I expected would have been at least 2000 bushels, and that it fell short was entirely owing to the unexampled injury caused this season by rust. As it was, my loss was less than on any other farm in the lower country that I have heard of, as but few made half a crop, and many did not save enough for seed. This difference was mostly owing to the manure I had used, as lime hastens the ripening of all crops, and a few days difference in the ripening of a field of wheat may either cause its destruction by rust, or insure its safety.

None of my limed land brought wheat until 1820, and the following table shows that but little average increase of product had taken place before.

Years.	Acres.	Product.	Average.	
1813	145	810	$5\frac{85}{145}$	Average per acre for 3 years—$5\frac{1}{3}$
1814	110	550	5	
1815	78	520	$6\frac{52}{78}$	
1816	104	896	$8\frac{64}{104}$	Second average—8
1817	79	595	$7\frac{42}{79}$	
1818	63	450	$7\frac{9}{63}$	
1819	132	1015	$7\frac{91}{132}$	Third average—$7\frac{1}{2}$
1820	119	1020	$8\frac{68}{119}$	
1821	160	1049	$6\frac{89}{160}$	
1822	154	1627	$10\frac{84}{159}$	Fourth average—$10\frac{1}{2}$
1823	139	1475	$10\frac{85}{139}$	
1824	194	1850	$9\frac{104}{194}$	
1825	195	1452	$7\frac{87}{193}$	

Some of the after increase is certainly due to other kinds of improvement; but I have no doubt that full three-fourths of the whole was caused by the use of calcareous manures, on land rested two years in four, and not grazed. During the first six years, only about half my corn land was put in wheat, the other half being so poor that even our overseers admitted that seed would there be thrown away. You must observe, therefore, that it was the richest half of each shift that averaged from $5\frac{1}{3}$ to 8 bushels. During the last term, all the land before left out, has been in wheat, which makes the increase of average product greater than would appear from the table. Even the highest rate of product above stated, may be thought contemptible by a farmer on your fine wheat lands: but through our poor and sandy country, the average does not exceed 5 bushels for the land actually put under wheat, and it would not be 3, if all the corn land was sowed. Yet the time will arrive, when by means of our calcareous manures, this now barren region, will show the fields the most highly improved above their natural state, and more profitable farming, than any portion of Virginia.

Your doubt whether lime will suit limestone soils, arises from the supposed similar constitution of soil and manure. I have not much personal knowledge of limestone lands, but have always supposed them, as you describe yours, "originally rich," and have attributed that richness to their being manured by nature with lime. It follows, from the supposition, that the value of lime as a manure will be lessened in proportion to the natural supply; that sometimes it may be useless or even hurtful, (as when the soil will effervesce with any strong acid,) and in no case can it be as beneficial as on our pine and whortleberry lands, which are entirely destitute of calcareous earth, and nearly so of lime in any other form. But it does not follow that lime may not be advantageously applied to most limestone soils, though to what extent and profit, experience can only show; for it is a remarkable fact, that but few of those in this state contain any portion of calcareous earth, (*carbonate* of lime,) though they are evidently affected by the limestone with which they are mixed, or in contact with. To the question, what has become of the calcareous earth which the soil must have derived from the rock, I answer, that it still remains in the soil in another form: the lime being combined with the acid furnished by the decomposing vegetable matter, which being abundant enough to take up all the lime applied by nature, shows that more might be beneficially applied. I cultivate more than 100 acres of land, naturally containing a slight mixture of shells, and which, in this respect, as well as in natural fertility, I suppose is nearly similar to your limestone soils; here the effect of calcareous manures, in the first crop, is scarcely perceptible, though I confide in the benefit increasing with time, and accordingly shall marl the remainder of this soil, as soon as I can finish what is less favored by nature, and where greater improvement has been derived. But others have met with more pleasing results. Your friend, Benj. Harrison, found great benefit from fossil shells, which he carried across the river from my shore, and applied to some acres of the naturally rich land at Berkeley. The extensive improvements made with oyster shell lime, by George E. Harrison, at Brandon, are mostly on land naturally rich, and not more destitute of lime than you will find most of your limestone soils.

When I speak of limestone soils, I mean to confine the term to such as are so intermixed with limestone, or lying so near it, that the soil must necessarily have been furnished with some of its component parts from the stone. If my theoretical opinions are correct, every such soil should be naturally rich, durable, and, when worn by cultivation, easy to restore by rest or manure, compared to poor natural soils. If you know any exceptions to this rule, if any real limestone soil is poor (without being made so by such evident causes as wetness, excess of rock, &c.) I would gladly be informed of the facts, as they would furnish the only known contradiction to the opinion before stated, that a proper proportion of calcareous earth will make all soils capable of becoming and continuing rich. But if Frederick is like Augusta and the adjoining counties which I have visited, you have soils enough, which, though (by courtesy) called limestone, are not better entitled to that name than the pine lands of the lower counties. By most persons, the term *limestone* is applied, not only to any land that shows a few detached masses of that rock, but also to wherever there are limestone springs, or under which a body of limestone lies, though forty feet beneath the surface. If the soil could be made calcareous by so distant a substratum, then the whole tide-water district would be so, as a body of fossil

shells lies under the whole extent, and generally much nearer the surface. Much of this land appeared to me very poor, and I think would be as much improved by lime as any of ours.

You ask, "to what crops, or in what mode, is lime most advantageously applied?" My fossil shells produce the most immediate effect when laid on the sod before ploughing, and corn, or some other horse-hoed crop, is first raised, to mix the manure well with the soil. But when convenient, I prefer laying it on after ploughing, as it is better intermixed in the course of cultivation, and the danger of its being buried too deep is avoided. Caustic lime is usually applied to the surface of ploughed land, and slightly covered by repeated harrowings; and it is evident that this mode of covering must convert the quick to mild lime, before its solvent powers can reach the more deeply buried vegetable matter.

Until I began on cotton this year, I have made no field crops except corn and wheat, to which calcareous manures are equally beneficial. Clover is much more improved than either by lime, and without it, (applied by nature or art,) it is in vain to attempt raising clover to any extent, in this part of the state. Several years ago, I formed the opinion, that on land made calcareous, gypsum would act, though of no effect before; and though not confirmed, the opinion has gained strength from my experiments and observations, and however opposed some facts are, the greater weight of evidence is decidedly in its favor. The *acidity* of our soils, I think, will serve to account for the general want of effect from gypsum, and the supposed change of results after first applying lime; but it would be premature to offer the explanation of a fact which, however important it may be, is yet of doubtful existence. You are aware that gypsum has seldom any effect below the falls, and that most of the opposite results are on the rich river lands, of all, the most exposed to the "salt exhalations," which have idly been supposed to cause this remarkable and general defect in our lands. You state the general objection to liming in Frederick to be, first, the belief that your soils are already sufficiently calcareous, and secondly, the cost of fuel. I have before offered you reasons for my belief that your soils generally are not even slightly calcareous, and on the most accurate examination, I do not think you will find a twentieth part of even your limestone soils to contain the smallest proportion of calcareous earth. The expense of burning I cannot estimate even on the practice of neighboring farmers, of whom I have in vain made inquiries. But even if your fuel should be rather more dear than on James river, you would obtain the material for lime at far less cost. Oyster shells, taken from vessels off the landing places, cost 62½ cents per hogshead, (yielding 14 bushels of lime,) while you would quarry the rock on the farm, or perhaps the field, where the lime was to be spread. But I doubt whether burning will be necessary in every case where you may manure with lime; as its solvent power is seldom used or wanted, it will serve as well mild as caustic, if it can be broken down fine enough without heat. Limestone gravel is used to great profit in Ireland, and perhaps may be found in our limestone country; and from my own limited observation, I know that substitutes for it may be obtained in various places, if they should be found to suit as well in their quantity, as in their richness. With a view to answering your inquiries, I paid attention to the subject during my late visit to the mountains, and would have examined many supposed materials for manure, but for the want of the necessary tests; as it was, I brought home, and have analyzed, eight or ten specimens of rock, which from their softness and supposed abundance, seemed to promise calcareous manure of some value, without the cost of burning. Of these, one, frequently seen in the roads, is like limestone in color, but more like slate in softness, and easily broken into thin layers, and what is exposed to the eye might be pounded to gravel without much labor. A specimen of this, taken about midway between Waynesborough and Staunton, contained 46.100 of calcareous earth; another, taken near Lexington, on the road to the Natural Bridge, contained 80.100. The stone which covers a considerable portion of the Arsenal lot has 84.100, and though much harder than the others, is so soft as to be considered of no value for common purposes, and can be quarried and broken down with a pickaxe. A stone which is very abundant about the Salt Sulphur Springs, is so hard, in the earth, as to yield only to the force of gunpowder, yet crumbles to small gravel after a few weeks' exposure to the air. This contains only 17.100, and is too poor to pay the expense of blasting, but would be worth using, if already exposed to the air. These specimens were selected almost by chance, and even if some judgment had been exercised, it would require many more examinations to prove the strength or worth of any large bodies of such substances; and they are mentioned only to show that such manures may be found, and are worth your seeking. Another calcareous rock is found in limestone streams, which is richer than my best shell-marl, and nearly as soft: I mean that deposite of limestone water, to which the name of *marl* is as incorrectly applied in the upper country, as here to our fossil shells. This is nearly pure calcareous earth, and so far as its quantity will go it must be a very cheap as well as rich manure. In these rocks I should expect to find resources for the improvement of land; but at the same time that I offer them to your notice, I am sensible that the very descriptions given most probably show how little I am acquainted with the substances recommended.

It may be objected that calcareous manures, the particles of which being as coarse as gravel and not very soft, would not be reduced in the soil, and would consequently remain nearly worthless. Certainly the most minute division is best, and therefore 100 bushels of burnt lime, may be expected to exert as much power on the first crop, as 200 bushels in a coarser state; and it may be admitted further, that particles of limestone, or shells, would for many years defy the decomposing powers of air, moisture and frost, which are commonly supposed the only agents for producing this effect. But however hard and insoluble these small fragments may seem, I believe a soil that requires lime, will completely dissolve all of moderate size in a few years. Such at least, is the invariable effect found, when a once acid soil is ploughed up for the second rotation, after applying the fossil shells, unless they were of the largest or hardest kinds, or the dressing unnecessarily heavy. Another fact will prove that this solvent action is peculiar to such soils as I have called acid. On our

river lands, spots may be seen whitened with thin bits of muscle shells, which have been exposed at or near the surface for thousands of years, and to the action of the plough for the last century; yet muscle shells, which on those places appear so indestructible, are thinner, softer, and, from the animal matter they contain, more easy to crumble than the fossil sea shells which are used for manure. The acidity, or something equivalent to acidity, in the one soil, and the absence of it in the other, will serve to account for the very different effects produced.

Yours, &c.

E. RUFFIN.

MANAGEMENT AND BREEDS OF HOGS IN MIDDLESEX, MASSACHUSETTS.

From the Fourth Report of the Agriculture of Massachusetts.

We have been compelled, however, in this, as in many other cases, to witness the capriciousness of public favor; and to adopt, with the variation of only a letter, the familiar proverb, and say in this case, that "every hog must have his day." The popularity of the Berkshire swine is on the wane. It is objected to them by many farmers that they are not large enough, though they are easily made to reach, at fourteen months old, 300 or 350 lbs.; and further, that they do not cut up well; and that the fat on their backs and sides is not thick enough, especially for packing down for fishermen, who would be glad to have their pork all fat, and whom I have seen spread their uncooked salted fat pork, as landsmen spread butter, on their bread.

The former objection is not made by all persons, as many would prefer for their tables the pork of a hog weighing 300 lbs. to that of hogs weighing 600 lbs. of which I have seen many in our market. With respect to the latter objection, I was half disposed at first to consider it as mere caprice, but that E. Phinney, of Lexington, a farmer in this matter "not unknown to fame,"—and another most respectable farmer of Franklin county, admit that there is some truth in it; and they, as well as many others, prefer a cross to the pure blood. The impression is becoming general, and the butchers in Quincy market are unanimous in their unfavorable opinion of the Berkshire hogs. They admit that their hams and shoulders are good for bacon; but their backs, where they most require it, have no depth of fatness, and they are therefore unsuitable for salting. They are good breeders and nurses. They may be kept, therefore, to much advantage where the object is to raise roasting pigs for the market. This is sometimes quite profitable where a sow has two litters a year. A roast pig, only weaned by the knife, has from time immemorial been deemed a most luxurious dish. So it is likely to continue to be. Charles Lamb says that the Chinese never knew the lusciousness of a roasted pig until an accidental fire occurred which destroyed a pig-sty with its inhabitants. In pulling the bodies of these poor creatures burnt to a crisp from the fire, some of the skin or flesh adhered to the fingers of the Chinese, and in put-their hands by chance to their mouths, they for the first time in their lives inhaled the odor and tasted the deliciousness of the roasted skin. After that, the *accidental* burning of pig-sties became so common that the civil authorities were compelled to interpose.

It is but just, however, to the Berkshires to say, that the unfavorable impression in regard to them, though general, is not universal. An intelligent and very exact farmer at Braintree, B. V. French, has found them to answer his expectations. Upon recently killing a number, he was well satisfied with their appearance, and is of opinion that much of the prejudice which exists against them belongs properly to the impure but not to the genuine race.

The introduction of the Chinese hogs into this country and into England seems to have been the foundation of all the extraordinary improvements which have taken place in this race of animals—improvements which, within less than half a century, have doubtless enriched the state of Massachusetts many hundreds of thousands of dollars, and the country by millions. The effects of this cross with other swine have been to give fineness of bone, plumpness and fulness of form, extraordinary thriftiness, and quietness of demeanor. The old race of hogs seemed to be of the wolf species in temper as well as condition, and were the personification of ugliness and rapacity. The first introduction of one of these animals into a secluded part of Scotland, within the last century, is matter of comparatively modern history. Having got loose from his sty, he appeared to the terrified imaginations of these simple people as the arch-fiend himself, and crowds hovered together through fear—the parish schoolmaster being at their head with an open Bible, to endeavor to lay this evil spirit! The animal now, in his improved condition, is regarded as one of the farmer's best friends; he eats what nothing else will eat; he is a general scavenger, and an excellent composter of manure. His own manure is one of the most enriching substances which can be supplied to the soil, though not one of the most lasting in its effects; and his flesh is the most frequent dish upon the farmer's table. This county may boast of great improvements in their swine. A Mr. Mackay, of Boston, owning a farm in Weston, obtained from abroad, some years since, a valuable hog, whose natural good qualities by good management he greatly improved. Some of this breed of swine have been most remarkable for thrift and weight. Besides this, a hog called the Mocho hog, long, round and thrifty, whose pedigree is not known, has been introduced here. Some of the best hogs which I have seen have been from an admixture of these three bloods. Mr. Phinney emphatically approves this cross; and the weight of his swine when killed, of some of which I subjoin an account, establishes the soundness of his judgment.

In 1840, Mr. Phinney sent the following hogs to market:

Feb. 6.	lbs.	Feb. 15.	lbs.	Feb. 17.	lbs.	mos. old
1 weighed	407	1 w'd	469	1 w'd	763	20
2 "	414	2 "	367	2 "	591	15
3 "	413	3 "	362	3 "	476	15
4 "	305	4 "	331	4 "	430	12
5 "	364			5 "	475	12
6 "	366			6 "	465	12
				7 "	430	12
				8 "	464	12

In 1841, the subjoined is a list of fifteen Berkshire and Mackay hogs from the same farm:

February 22, 1841.

	lbs.		lbs.		lbs.
1 weighed	738	1 weighed	528	1 weighed	487
2 "	655	2 "	523	2 "	480
3 "	579	3 "	517	3 "	476
4 "	574	4 "	503	4 "	441
5 "	556	5 "	501	5 "	400

The grass-fed hogs, which I have before mentioned, are regaining their popularity. They have been, to a degree, crossed and intermixed with various valuable breeds in the interior, and are now preferred to all others in the Brighton market. With good care and keeping, at fifteen and eighteen months old they are easily carried to 500 and 600 pounds.

Of four, fatted by Stephen Morse, of Marlborough, the current season, the weight was as follows: 539 lbs., 530, 506, 459—averaging 508½ lbs. each. These hogs were put into the sty in September, 1840, weighing between 70 and 80 lbs. each, and were killed in October, 1841. They were kept mainly upon boiled potatoes the firs winter, and since that, upon the slops of the dairy, skim milk, butter milk, whey and Indian meal.

Some of the best hogs which I have ever seen have been fatted at the slaughtering establishment of Jesse Bird, in Watertown. He keeps his swine about six months. He purchases the grass breed above mentioned, preferring hogs with a small head, round and full body, though not deep belly, and with full shoulders and broad backs. They are taken in, weighing from 170 to 200 lbs., kept in the slaughter-yard for a time, and previous to killing, are fed upon potatoes and Indian meal cooked, and are brought to weigh from 450 to 600 pounds.

At the slaughtering establishments in the vicinity of the capital, large amounts of pork are supported and fatted upon the offal. Sometimes this is cooked for the swine; in other cases it is given in its raw state, so that without any troublesome change in the way of preparation, the hogs eat the cattle and then men eat the hogs. It is easy, but not agreeable to imagine in such cases what the pork may be. The richness of animal food becomes thus a little too much concentrated even for the epicurean palate; and few persons knowingly would have the courage to touch such food when coming directly from the slaughter-yard, excepting some, who are cannibals by nature, and by some accident have been misplaced in a civilized country. It answers very well for shipping pork, for no questions of taste are ever held over a barrel of provision either on a slave plantation or at sea. It is ascertained, however, that in fatting swine, some portion of animal food and pot liquor is highly conducive to thrift. In the best establishments, the hogs, some time before being slaughtered, are put upon vegetable food, potatoes, Indian meal, &c., so that the rankness of the pork is taken away.

E. Phinney's swine establishment, at Lexington is among the most extensive in the county. His number of fattening swine averages about 100, with 50 store hogs, and they are killed in February and March, when from 10 to 18 months old, being of the fall and winter litters of the previous year. His pens are well arranged; seldom occupied by more than three or four in a pen. They have a manure yard attached to each pen, into which bog-mud and litter are thrown for their manufacture and compounding, and they have always a dry and comfortable bed. They are fed regularly three times a day. I shall subjoin an account given by himself of his mode of management, which the farmers will read with interest.

* * * * *

"An inquiry is often made as to the best time of killing, or at wheat age it is most profitable to slaughter them. On a large farm where much green herbage is produced and where the value of the manure is taken into the account, the pigs killed at the age of 15 and 16 months, give the greatest profit. When it is intended to kill them at this age, they may be kept on more ordinary and cheaper food for the first 10 or 12 months, or till within 4 or 5 months of the time of killing. The manure they make and the extra weight of pork more than pay the expense incurred in keeping them the longer time; but the spring pigs which are to be killed the ensuing winter and spring, must be kept upon the best of food from the time they are taken from the sow until they are slaughtered.

"The older class of pigs for the first 10 or 12 months are kept principally upon brewers' grains, with a small quantity of Indian or barley meal, or rice, ruta-baga, sugar-beet, &c., and in the season of clover, peas, oats, cornstalks, weeds, &c., they are cut green and thrown into the pens; the next 4 or 5 months before killing they have as much Indian meal, barley meal or rice, with an equal quantity of potatoes, apples or pumpkins, as they will eat, the whole being well cooked and salted, and given to them about blood warm. During the season of fattening, an ear or two of hard corn is every day given to each pig. This small quantity they will digest well, and of course there is no waste. Shelled corn, soaked in water made as salt as the water of the ocean for 48 hours, with a quart of wood ashes added to each bushel and given to them occasionally in small quantities, greatly promotes their health and growth. Their health and appetite is also greatly promoted by throwing a handful of charcoal once or twice a week into each of their pens. Their principal food should, however, be cooked thoroughly and nicely. From long practice and repeated experiments, I am convinced that two dollars' worth of material well cooked, will make as much pork as three dollars' worth of the same material given in a raw state.

"Pigs when first taken from the sow should be treated with great care, to prevent them from scouring and becoming stinted; when either of these happen, it will require many days and sometimes weeks to put them again into a healthy growing condition. When first deprived of the maternal food, a little new or skim milk, boiled and slightly salted and given to them often and in small quantities, will prevent scouring and greatly promote their growth. If intended for killing at the age of 9 or 10 months, they should be full fed all the time and kept as fat as possible. If, on the other hand, they are intended for killing at the age of 15 or 18 months, they should not be full-fed, nor be made very fat for the first 10 or 12 months.

"To satisfy myself of the benefit of this course, I took 6 of my best pigs 8 weeks old, all of the same litter, and shut them in two pens three in each. Three of these I fed very high and kept them as fat all the time as they could be made. The other three were fed sparingly, upon coarse

food, but kept in a healthy, growing condition, till within 4 or 5 months of the time of killing, when they were fed as high as the others. They were all slaughtered at the same time, being then 16 months old. At the age of 9 months the full-fed pigs were much the heaviest, but at the time of killing, the pigs fed sparingly, for the first 10 or 12 months, weighed, upon an average, fifty pounds each more than the others. Besides this additional weight of pork, the three "lean kine" added much more than the others to my manure heap. These results would seem very obvious to any one who has noticed the habits of the animal. In consequence of short feeding, they were much more active and industrious in the manufacture of compost, and this activity at the same time caused the muscles to enlarge and the frame to spread, while the very fat pigs became inactive, and like indolent bipeds, they neither worked for their own benefit nor for that of others.

"For the purpose of increasing my manure heap, my pens are kept constantly supplied with peat or swamp mud, about three hundred loads of which are annually thrown into my sties. This, with the manure from my horse stable, which is daily thrown in, and the weeds and coarse herbage which are gathered from the farm, give me about 500 cart loads of manure in a year.

"On regular and systematic feeding and clean and dry bedding, the success of raising and fattening swine very much depends. A faithful feeder, also, who has some skill and taste and withal a little pride of vocation, is indispensable."

Of all articles ever given to fatting swine Indian meal is, without doubt, the most nutritious. Mr. Phinney, it seems, has by actual trial settled a much vexed question, whether hogs should be forced by full feeding when young, or at first be only kept well in a growing state. He found it better, when designed to be kept more than a year, to let the young animal, by sufficient but not excessive feeding, have time to develope himself and acquire a natural size, rather than, by filling him to repletion, to bring on a premature state of fatness, which seemed to check the growth. To young pigs, milk, whey and buttermilk are the best of all feed; but where cows are kept for the purpose of supplying the market with milk, the pigs will be of course regarded as very poor customers. "The milkman will not call." There is however, as I have shown before, under some circumstances, a mistake in this matter.

The establishment of J. P. Cushing, Watertown, for keeping and fatting swine, is upon a large scale, and is exceedingly well contrived for his situation. It consists of a long one-story building, with separate pens on one side extending the whole length, each designed for four swine, with an open yard and a lodging and eating room to each besides some lying-in apartments.* A commodious passage-way runs the whole length of it, with the troughs projecting into the passage-way, and a shutter for the troughs so contrived that the trough is easily cleaned at any time, and the food of the hogs is placed before them without admitting that which, in the usual slovenly mode of feeding, is but too common, an uncivil interference on their part before all is ready. Some contrivance as effectual as this for another class of animals would be quite useful at some of our public hotels and steamboats, and save us from the severe remarks of those foreign travellers who have little sympathy with our customary despatch of business, and seem to look upon us as a nation of fire-eaters.

The cooking apparatus is at one end. Had economy of room and ease of feeding been studied, the building might have been double the width, with pens on each side. In England, they are sometimes made circular with the cooking apparatus in the centre and the feeding troughs all within the circle; but in such cases there must be much waste of room. Mr. Cushing's barracks are lengthwise of his cattle-yard, so that the manure from the pens of his swine is thrown immediately into the yard, and any litter or muck easily supplied in the same way. His store hogs, too, at pleasure may be turned into the cattle-yard with the advice given in Æsop's fable by the dying father to his sons, "that there is a treasure buried in the field which they would find by digging for it." The swine however do not much need the advice. They are natural philosophers and go by instinct into deep investigations. Some of them should always be kept in barn-yards and cellars. They are of great use in turning up and mixing the manure; and in yards where cattle are fed upon grain, and the sweepings of the barn floors are thrown out, they take care that nothing is lost. I have known a considerable number of store hogs kept in a thrifty condition upon that only which they obtained in a yard where a proportional number of beef cattle were stall-fed. The philosophy of reciprocal uses, which is apparent in every department of nature, though it frequently presents itself in a form offensive to a fastidious taste, is to a reflecting mind always instructive on the wonderful economy of the divine providence.

A very large hog establishment in this county is to be found in West Cambridge on the farm of Abner Pierce. He keeps in his enclosure about 500 hogs. They are supported upon the city swill or refuse. No hogs are allowed to be kept in Boston but by special and extraordinary permission; and among the excellent municipal regulations, the refuse vegetables, meat, garbage, and offal of the houses are required to be kept by each householder in a box or barrel which is emptied once a week or oftener by the city scavengers. This, being taken into the covered city carts, is delivered at Mr. Pierce's establishment, about five miles from the city, daily—he paying therefor to the city 4000 dollars per year on a contract for five years.

His hogs, when I visited him, were in an enclosure of about fourteen acres, partly covered with trees and bordering on one of the beautiful ponds in that vicinity, a picturesque situation most certainly, for animals making such humble pretensions to taste and sentiment. If nothing else, however, in the summer months they enjoy, as much as their betters, the luxury of a refreshing bath and quiet repose under the shade, both essentially conducive to their health and thrift.

* The length of this building, including the cooking-place, is 252 feet, width 12 feet, and height the same. There are twenty pens, each 12 feet by 8, and a yard of 12 feet attached to each pen. The number of hogs that can be accommodated depends upon their sizes—from three to six, say an average of four of 300 weight each. There were fatted fifty-two hogs last season, weighing, dressed, 15,573 lbs.

He has had no general disease among them, though occasionally a case of the "blind staggers." He considers this troublesome disease as proceeding wholly from indigestion; and he finds no difficulty in its cure, by procuring an immediate evacuation. For this purpose he gives a dose consisting of half a pint of lamp oil, and half a pint of molasses, strongly charged with pounded brimstone. This remedy is important to be known, as the disease is not uncommon among swine, and often proves fatal. This disease can hardly be considered local, though the "blind staggers" in years gone by, has been known to prevail in some localities near at least one of these ponds among a class of animals, who assume to be of a higher rank, but who occasionally pollute these beautiful regions by a resort to them for purposes of dissipation; but a simple and perfect preventive is at last found for *this* disease, (so much more humiliating and dreadful in its effects on *them*,) if they can be induced to take it, in "total abstinence."

Mr. Pierce's hogs are purchased; he raises none. He buys them at a weight of 100 to 150 lbs. Their average weight when killed, is from 250 to 300 lbs. He has a killing twice a year, though many of his hogs are kept a year. The supply of refuse from the city, is sufficient, excepting at certain seasons of the year, when some meal and corn are given. They fatten in the yard without extra feed, excepting as above. At killing, the skins (that is the small entrails) are sold at 10 cents a set; the harslet at 8 cents; which pay fully the expenses of dressing. The remainder is cooked for the swine, after saving and selling what can be used by the soapmaker. The manure made in their beds where they are littered, is sold readily at four dollars per cord and in quick demand. The average sales of manure are not less than one thousand dollars.

In the enclosure there are extensive plank platforms on which the garbage is spread when brought from the city. The right of cleaning the tables, after the hogs have filled themselves, is purchased by several neighboring farmers at $2 50 per day. Much of the refuse thus obtained is spread upon their grass lands, or ploughed in on their cultivated grounds, or placed round their apple trees, and in every case with the greatest advantage. If not used immediately it is put into a compost heap and covered with mould. Some farmers who obtain it use much of it for feeding their own swine. One farmer stated to me that he had purchased the right of obtaining it two days in a week. He kept the last year fourteen hogs entirely upon these gleanings. The gain upon these hogs in live weight from 1st October to 1st April, when he sold them on foot, was 2800 lbs. Other farmers have been equally successful in this economical process.

The average gain of the hogs at this establishment is rated at a pound per day, live weight. A large amount of bones are brought out in the carts, and these find a ready sale at the bone-mill for manure.

The question of profit in keeping and fattening swine has been much discussed, and so much depends on circumstances of age, breed, food, length of time kept, and price in the market, that the question must remain open. Mr. Phinney gives it as his opinion that with Indian corn at one dollar per bushel and potatoes at 33 cents, and the price of pork 12 cents, they may be fatted to a profit. In his experience, he says, four quarts of Indian or barley meal with an equal quantity of apples, pumpkins, potatoes or roots cooked, will give two pounds of pork.

A small example of fatting swine in Medway, Norfolk county, which came under my notice, seems worth recording, because an exact account of their cost was kept. The owner was a mechanic and bought every article of their feed, not even keeping a cow. His two hogs when killed weighed, one 420 lbs.—one 382 lbs., and pork was then worth 12 cents per lb. Value when dressed $96 24 cts. They were killed at 14 months old. They were bought in November and killed in the December of the next year. They were kept in the sty the whole time; were fed three times a day with weeds, corn and potatoes. The potatoes were boiled and the Indian meal mixed with them into a mash. They were fed exclusively on corn one week before being killed. They did as well in winter as in summer. Salt was frequently given to them in their swill. The price of corn bought for them was 117 cents to 136 cents, or an average of 130 cents per bushel. Potatoes were 30 cts. per bushel. The whole cost of the hogs when fatted was $62 including the price of purchase, or 7.8 cts. per lb.

I shall here subjoin some careful experiments made by myself a few years since in relation to this subject. They were given to some portion of the public at the time, in another form; but they may here reach many by whom they have not been seen, and to whom they may be interesting.

Experiment 1. Two hogs about one year old; one of them a barrow in very good condition; the other a barrow recently gelded and in ordinary condition, were put up to be fed exclusively upon Indian hasty pudding or Indian meal boiled with water. We began feeding them the first of March, 1831, and weighed them again on the nineteenth of the same month. In the eighteen days they consumed six bushels of Indian meal. They were offered cold water to drink but did not incline to take any. The result—

No. 1 weighed on 1st March,	-	233 lbs.
" " 19th "	- -	269
	gain	36
No. 2 (recently gelded) weighed on 1st March		190
" " 16th "		247
	gain	57

The gain of the two was 93 lbs. in 18 days. The quantity of meal consumed by them was 10 quarts per day to the two. We allow 30 quarts to a bushel deducting two for grinding. The price of corn at the time was 70 cents per bushel. The expense of the increased weight is 4.5 cents per lb.

March 21, 1831. Killed the hog mentioned first in the foregoing experiment. Live weight 273 lbs. Weight when dressed 215 lbs. Loss in offal, loose fat included, 58 lbs. or a little more than one fifth.

Experiment 2. No. 2 mentioned above weighed

on 23d March,	-	253 lbs.
do. on 30th April,	-	312
In 38 days, gain,		59 lbs.

No. 3, a shoat purchased from a drove weighed on 28th March, - 100 lbs.
do. on 30th April, - 151

Gain in 33 days, - - - 51 lbs.

This is a fraction over 1 lb. 8 oz. per day each, nearly 1 lb. 9 oz.

In this case their food was exclusively boiled potatoes mashed with Indian meal. The exact amount consumed not ascertained, but fed as freely as they would bear.

Experiment 3. The two last-named hogs were for the next 20 days put upon Indian hasty pudding exclusively, with the following result:

No. 2 weighed on 30th April, - 312 lbs.
" " 20th May, - 382

Gain in 20 days, - - 70 lbs.
No. 3 weighed on 30th April, - 151
" " 20th May, - 185

Gain in 20 days, - - 34 lbs.

The two in the above named 20 days, consumed 4½ bushels of meal, cooked as above. Meal 78 cents per bushel. Gain of the two, 104 lbs. in 20 days.

Experiment 4. Sundry swine purchased from a drove, and fed with meal and potatoes, washed and mashed—

	28th March, 1831. lbs.	19th May, 1831. lbs.	lbs.
No. 1 weighed	97,	165, gain in 52 days	68
2 "	134,	182, " "	48
3 "	100,	186, " "	86

The two following, raised on the farm, and fed as above—

	25th April, 1831. lbs.	19th May, 1831. lbs.	lbs.
No. 4 weighed	151	206, gain in 24 days,	55
5 "	140	165, " " "	25

Experiment 5. In this case it was not intended to force their thrift, but to keep the swine in an improving condition. They were shoats of the last autumn, and were of a good breed.

Tuesday, 3d April, 1833. Put up four shoats, and began feeding them with Indian hasty pudding.

	3d April.	22d April.		25th June.		
No. 1	176 lbs.	202 lbs.	gain 25	264 lbs.	gain 62	
2	119	153	" 34	226	" 73	
3	150	170	" 20	218	" 48	[Total 183 lbs.
4	121	145	" 24	Killed May 30.		

From 3d April, to 22d April, the above swine consumed seven bushels and one peck of Indian meal. From 22d April, to 25th June, seven bushels of Indian meal, cooked as above.

One of the above, No. 4, was killed on 30th May; being absent, the live weight was not ascertained.

On the 25th June, the three remaining hogs were weighed, and in the 63 days from 22d April to 25th June, they had gained in that time 183 lbs. as above.

After 30th May, when one of them was killed, one peck of meal made into hasty pudding with a small allowance of the waste of the kitchen for a part of that time, lasted them three days, that is 22-25 or less than a quart, say ⅞ of a quart per day to each.

At first we employed half a bushel of Indian meal to make a kettle of hasty pudding; but we soon found that a peck of meal by being boiled sufficiently would make the same kettle nearly full of hasty pudding and of sufficient consistency. The kettle was a common-sized five-pail kettle, set in brick work in the house; and it was remarkable that the peck of meal produced nearly the same quantity of pudding, that we obtained from the half bushel, which showed the importance of inducing the meal to take up all the water it could be made to absorb.

The price of Indian corn was at that time 75 cents per bushel—30 quarts of meal to a bushel deducting the toll. The amount of meal consumed in the whole time from 3d April to 25th June was 14¼ bushels—the cost $10 69—the total gain, making no allowance for the gain of No. 4, from 22d April to 30th May, which was not ascertained, was 287 lbs.

The gain of No. 1, 2 and 3, from 22d April to 25th June was 183 lbs. in 63 days; and allowing one peck to serve the three hogs for three days, required 5¼ bushels, the cost of which was $3 94. The live weight could not be estimated at less than 4 cents per lb. when pork was at market 6 cents.

The value of the 183 lbs. therefore was equal to $7 32, or at 5 cents to $9 15 cents.

The gain of the swine for the first 19 days, from 3d to 22d April, was:

No. 1, 26 lbs. or 1.368 per day.
" 2, 34 " or 1.789 "
" 3, 20 " or 1.052 "
" 4, 24 " or 1.263 "

The gain from 22d April to 25th June, 63 days, was:

No. 1, 62 lbs. or 0.984 per day.
" 2, 73 " or 1.158 "
" 3, 48 " or 0.761 "

The difference of daily gain in the two periods was attributable to the diminished quantity of meal. The question then arises, whether the first mode of feeding was as economical as the second.

In the first 19 days, 7 lbs. 1 peck consumed, gave 104 lbs. gain. In the next 63 days, 5 lbs. 1 peck consumed, gave 183 lbs. gain.

Had the first gain been in proportion to the second gain in reference to the meal consumed, the 7¼ bushels which gave 104 lbs. should have given 252 5-7 lbs. This great disparity can be explained only in the more economical preparation of the meal, by which a peck, taking up as much water as it would contain, gave a kettle nearly full of pudding, when half a bushel of meal imperfectly prepared, gave little more. This seems to demonstrate the great advantage of cooked food, both as it respects its increase of bulk and the improvement of its nutritive properties. Whether it would apply to those substances, whose bulk is not increased by cooking equally as to Indian meal and the like, is a matter which experiments only can determine.

Such are some few trials in reference to the feeding and fattening of swine, which I have made, or information of which I have obtained from other sources, which may at least lead the inquisitive farmer to further experiments and inquiries, on a subject of great importance to his interest. The inferences to be made from them I shall leave to others. The results, as will be observed, are not uniform. The thrift of animals must depend on various other circumstances

besides the kinds or the quantity of food given them. Much depends on the breed, as every farmer knows; much on the health of the animal; something on the season of the year. I failed in attempting to fatten several swine in one case, though they were carefully attended and various kinds of feed were tried, and the failure was totally inexplicable until they were slaughtered, when the intestines were found corroded with worms, resembling those found in the human stomach, and this, I have no doubt prevented their thrift. The same fact has occurred in another instance, and with the same result. I failed in attempting to fatten some other swine, who had been driven a considerable distance and exposed, probably not even half fed on the road, to severe cold and storms. Some of them were frost-bitten in their limbs; and though attended and fed in the most careful manner they made no progress for months. In an experiment recently made, of giving swine raw meal mixed with water, I have found a falling off in their gain of nearly one half, compared with giving their food cooked, such as boiled potatoes and carrots, mixed with meal while hot; the result being in a sty containing a number of swine, as 279 to 500. In respect to confinement or freedom, various opinions are entertained. The Shakers at Canterbury, N. H., deem it indispensable to the thriving of their swine that they should have access to water to wallow or to wash themselves in; and that they by no means do so well without it. On this point I have had no trial further than to satisfy myself that fatting hogs are sometimes injured by being suffered to root in the earth.

With respect to the age at which it is advantageous to put up swine to fatten, I have only to remark, that it is with swine as with other animals, there are some breeds which come much sooner to maturity than others. A successful farmer in Saratoga county, N. Y., says that March pigs, killed about Christmas, are the most profitable for pork. Four pigs of what is called the grass breed, were slaughtered at Greenfield, N. Y., which weighed 348 lbs., 318 lbs., 310 lbs. and 306 lbs. at nine months and seventeen days old.

On this point, I present a letter with which I was honored by the late John Lowell, whose authority in the agricultural community is justly estimated.

"*Dear sir*:—I have been prevented answering your inquiries as to my experience in raising old or young pigs. I may say that I have fully and clearly ascertained, from a trial of 20 years, that young pigs of from 25 to 30 lbs. will give nearly double, in some remarkable case three times as many lbs. as shoats of 6 months weighing from 100 to 150. I have taken two pigs of 100 lbs. each, age six months, and never was able between May and November, to get them above 180, rarely above 170. I have taken three pigs of about 30 lbs. each, and on the same food which I gave to the two, they would weigh from 170 to 180 each in the same period;—nay I have taken pigs of 200, and never could get them to weigh more than 300 in 7 months on my food. The way I ascertain the quantity of food is, that I never give any thing but the produce of my dairy, and the refuse of the garden, peaches, apples, and cabbage, which are uniform generally.

"3 pigs of 90 wt. or 30 wt. each, will give ordinarily 510 lbs.
less original wt. 90 often not more than 60.
gain 420 lbs.

2 pigs of 100 wt. each, will give ordinarily 340 lbs.
less original wt. 200
gain 140

"But the 3 pigs of 90 will not consume for the first 3 months half so much as the 2 of 100 each, and I have kept a 4th and sold it in August for quarter pork.

"There is nothing new or remarkable in these facts. It is the law of the whole animal creation. It is true of the calf and of man. The child of 7 lbs. quadruples its weight in 12 months; and the calf of 60 wt. if fine and well fed will weigh 600 wt. at the end of the year, and (if a female) will not double the last weight at any age.

"P. S. It should be remarked that the weight at purchase is live weight, and at sale dead or net weight, because in truth, to the owner this is the true mode of considering the subject. No doubt my sort of food is peculiarly favorable to young animals, it consisting in very liberal allowance of milk. If the older pigs were at once put on Indian meal they would attain to 250 lbs. at a year old, but the cost of the meal at 70 cts. per bushel would amount to 9 dollars, and if the first cost, 5 dollars 50 cents, be added, and the pig sold at 6 cents, there would be but 2 dollars gain on 2 pigs of 100 lbs. each; while 3 small pigs without meal fed on milk would give 24 dollars in the same time. I do not mean to give minute details but general views. As an important qualification of the foregoing statement it should be added, that shoats of 6 months bought out of droves have usually been stinted in their growth, and animals like trees, recover slowly after a check. I presume if shoats were taken from a careful and liberal owner the difference would be less. But as a general law it may be safely affirmed, that weight for weight at the purchase, the younger the animal the greater the positive, and the far greater the net gain. At least such is my own experience and belief."

The preceding facts and experiments encourage the belief that hogs may be raised and fattened by the farmer to advantage, where corn is worth about 70 cents per bushel, and his pork will bring him 6 cents per lb. Success must greatly depend on skill, care, selection, and good management. The best swine that I have ever found have been in dairy countries, for there cannot be a doubt that milk and whey for every animal are among the most nutritious of aliments. Indian meal probably ranks next, though many farmers prefer a mixture of provender, such as corn, oats, rye, or barley; but I believe in all cases cooked food will have a decided advantage over that which is given in a raw state: an advantage more than equivalent to the labor and expense of its preparation. Potatoes are a valuable article of food, but the pork is not so good as that fattened upon corn. Carrots are more nutritious than potatoes. Corn given in a raw state or on the ear is a most wasteful management.

Swine ought to be kept on every farm in sufficient numbers to consume all the offal and waste of

the dairy and kitchen. If, beyond this, a breed can be obtained, which will arrive at early maturity, and which can be advantageously grass-fed or kept at a small expense and in an improving condition through the summer; and being put up to fatten early in autumn and forced as much as possible so as to be sent to market early in the winter, the farmer will ordinarily find a fair profit in this branch of husbandry. A great advantage is found in the keeping of swine from the valuable returns of manure, both in quantity and quality, which are obtained from them, where care is taken to supply them with raw materials for the manufacture. Too much care cannot be bestowed in the selection of the breed and the general health of the animal when put up to feed; and it is strongly recommended to every careful farmer occasionally to weigh the animal and measure the feed, that he may ascertain seasonably on which side the balance of debt or credit is likely to fall. Nothing is more prejudicial to good husbandry than mere guesses and random conjectures; and though the result of our operations may not meet either our wishes or expectations, an intelligent mind will be always anxious as far as practicable to know precisely how far they correspond with or disappoint them.

The profit of fatting pork with us has become much more questionable since such vast amounts of salted pork and hams are brought into our markets from Ohio and the far western states, through the great and constantly increasing facilities of transportation. It is judged that much more than a year's supply is now on hand in the city of New York, and the new has not begun to come in.

This must essentially affect our markets. But it is to be considered that to a certain extent our own pork here will always be preferred; and that fresh pork, the lean pieces, will always be wanted in our market, with which the western pork cannot at present come into competition, though after the experience of the last five years, it might be almost rashness to say that our markets may not yet be supplied with roasting pigs and fresh spare-ribs from Cincinnati. Then again there is on every farm a certain amount of refuse and offal, which may be profitably given to hogs, and would otherwise be lost. There is another circumstance, which must go to the credit of our swine. Manure in Middlesex county is every where valued at least at 4 dollars per cord on the farm. A hog duly supplied with the raw material, for a hog cannot, more than an Israelite, make bricks without straw, will make three cords of valuable manure in a year. A sow well kept likewise may raise a litter of pigs, and may be fitted for the market in the same year. These circumstances may encourage us to think that, in spite of western competition, a certain amount of pork may be profitably fatted among us every year. It is comparatively a recent discovery that apples are as good for fatting swine as potatoes. This opinion has been expressed to me by many farmers in this county. Apples may be cultivated to an indefinite extent and at a small expense. We may easily avail ourselves of this advantage. The opinion of many of these farmers is, that they are better given raw than cooked. This point will, I hope, be made matter of experiment. The fatting of hogs, however, is subject to so many contingences, that under present circumstances, excepting where extraordinary supplies of food are easily obtained, upon a large scale, it can be safely undertaken only with extreme caution and care. Many, who have undertaken it, have been unsuccessful.

ERRATUM.—Vol. IX. p. 679, 4th line from foot of 2d column, for "enormously," read "numerously."

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